TECHNOLOGY DEPARTMENT

NOVEMBER • 1959

v16 #11

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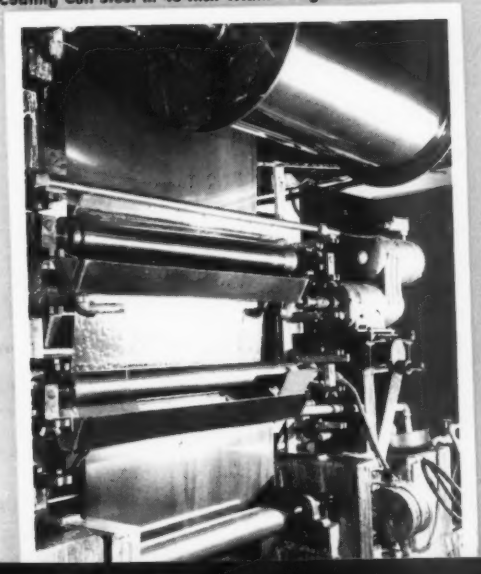
DETROIT

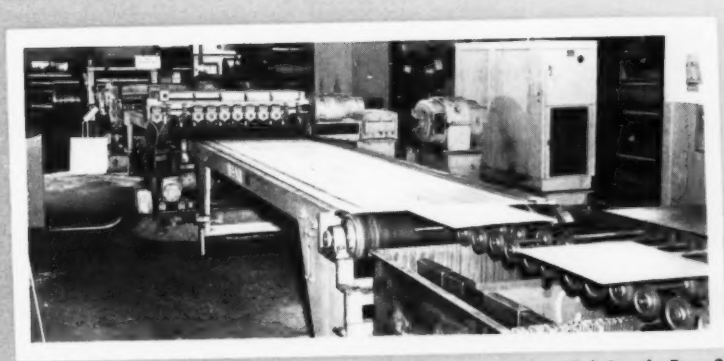
# Metal Products Manufacturing

## Serving the Appliance and Fabricated Metal Products Industry

Appliance Service Organized For Profit—Page 29

Coating Coil Steel in 48-Inch Width—Page 56





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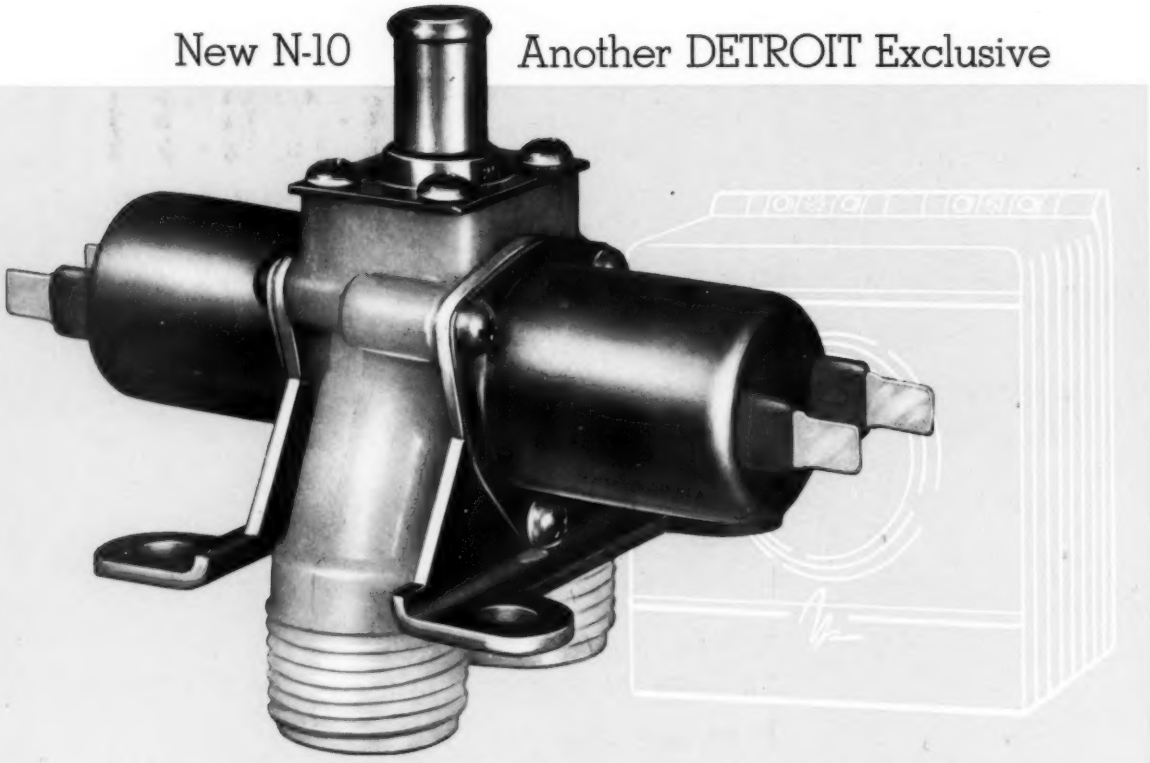
New N-10 Another DETROIT Exclusive



# guarantees a full tub with pressures from 5 to 20 psi

One thing about a housewife—she can really complain when her appliances don't perform as they should. Take a washing machine, for example. She'll never understand that varying water pressures caused by a low-volume well, heavy summer lawn sprinkling or low pressure suburban systems, will frequently prevent her from getting a full tub of water. And the onus in her mind is strictly on the manufacturer.

But it needn't be. Detroit Controls has just announced a new—*improved*—N-10 washing machine valve that provides a full tub despite water pressures which might vary from 5 to 20 psi or more! The secret is a new device that assures positive flow control under abnormal pressures. And, of course, it provides equally top performance during normal conditions. The valve has been proven on leading automatics.

Write Detroit Controls, 5900 Trumbull, Detroit 8, Michigan for complete information.

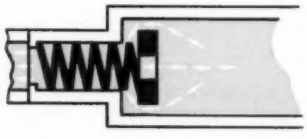
## here's how

**FULL PRESSURE**

**. . . depresses the flow-control washer into a spring-loaded seat. Water passes through center orifice only.**

**LOW PRESSURE**

**. . . is not sufficient to seat the flow-control washer. Water passes around washer as well as through the center orifice.**



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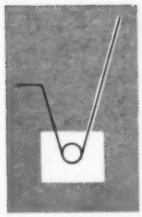
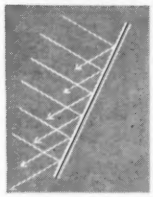
AMERICAN-Standard

DETROIT CONTROLS DIVISION

# ARMCO
# ALUMINIZED STEEL
# TYPE 1

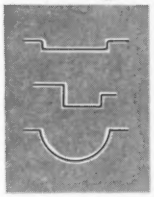


Sturdy steel coated with aluminum by a patented hot-dip process. No metal of comparable price can match ALUMINIZED STEEL Type 1 in resistance to destructive combinations of heat and corrosion.



The surface of this aluminum-coated steel reflects up to 80 per cent of radiant heat. It's used to "save" heat (hold it in) or to direct heat where it's wanted.

ALUMINIZED STEEL will withstand moderate forming, drawing or spinning operations without flaking or peeling



of the coating. Costs stay low because ALUMINIZED STEEL needs no further finishing after fabrication. Twenty years' experience by hundreds of manufacturers shows that products and parts made of ALUMINIZED STEEL mean service savings too—through longer life, more efficient operation.

For information about this aluminum-coated steel originated by Armco, write: Armco Steel Corporation, 2469 Curtis Street, Middletown, Ohio.

New steels are born at Armco

## ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation

# DRAWERS DIPPED . . .
# CABINETS SPRAYED
# EACH BAKED DIFFERENTLY

# *Yet Color Matches Perfectly*

File drawers are not the most ideal objects for dipping and the problem becomes even more complicated when the color is a light pastel.

Yet, Cole Steel Equipment Co., manufacturer of fine office furniture, is doing just that with Interchemical's Desert Sand POLYMERIN* enamel.

Drawers and other parts are dipped, cabinets are sprayed. The various components are baked in DIFFERENT ovens at DIFFERENT time-temperature cycles. Yet, when assembled, the parts match perfectly in color and gloss. No sags—no runs—no "show-through" on the sharp edges.

Moral of this story—Interchemical has a very special "know-how" on dipping and flow-coating. Maybe we have the answer to YOUR problem. It costs nothing to find out.

Office equipment manufactured by Cole Steel Equipment Co., Inc.

**Interchemical**
CORPORATION
**Finishes Division**

Headquarters Office: 224 McWhorter St., Newark 5, N.J. • Factories: Chicago, Ill. • Cincinnati, Ohio • Elizabeth, N.J. • Los Angeles, Cal. • Newark, N.J. • Mexico City, Mex. • In Canada, this product is made by Auleraft Paints Limited, Toronto, Ontario, and sold under its trademark. **IC and POLYMERIN are trademarks of Interchemical Corporation.*

NOVEMBER • 1959
VOL. 16 • NO. 11

# MPM

(including finish)

MONTHLY TRADE PUBLICATION
Established January 1944
*Published by*
DANA CHASE PUBLICATIONS, INC.
York Street at Park Avenue, Elmhurst, Illinois
Telephones • TErrace 4-5280 • TErrace 4-5281

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# METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

**A trade publication** devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.

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DANA CHASE PUBLICATIONS, INC.
PRINTED IN U.S.A.

Accepted as a controlled circulation publication at Aurora, Illinois.

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**SHEARING.** In the fabrication of flat sheet metal, irregular shearing is frequently a very important operation. Republic Stainless Steel, because of its controlled qualities, responds to most types of machines designed for this operation.

*These pictures tell the story!*

# REPUBLIC STEEL SHEETS TAKE MANY FABRICATING OPERATIONS —MEET MANY PRODUCT REQUIREMENTS

Photographs on these pages show how the Bastian-Blessing Company, Chicago, Illinois, uses Republic Steel Sheets in producing a line of high-quality refrigerated soda fountain and food service equipment. These units are installed in restaurants, drug stores, and other places where maximum cold protection, cleanability, and sanitary appearance are of utmost importance.

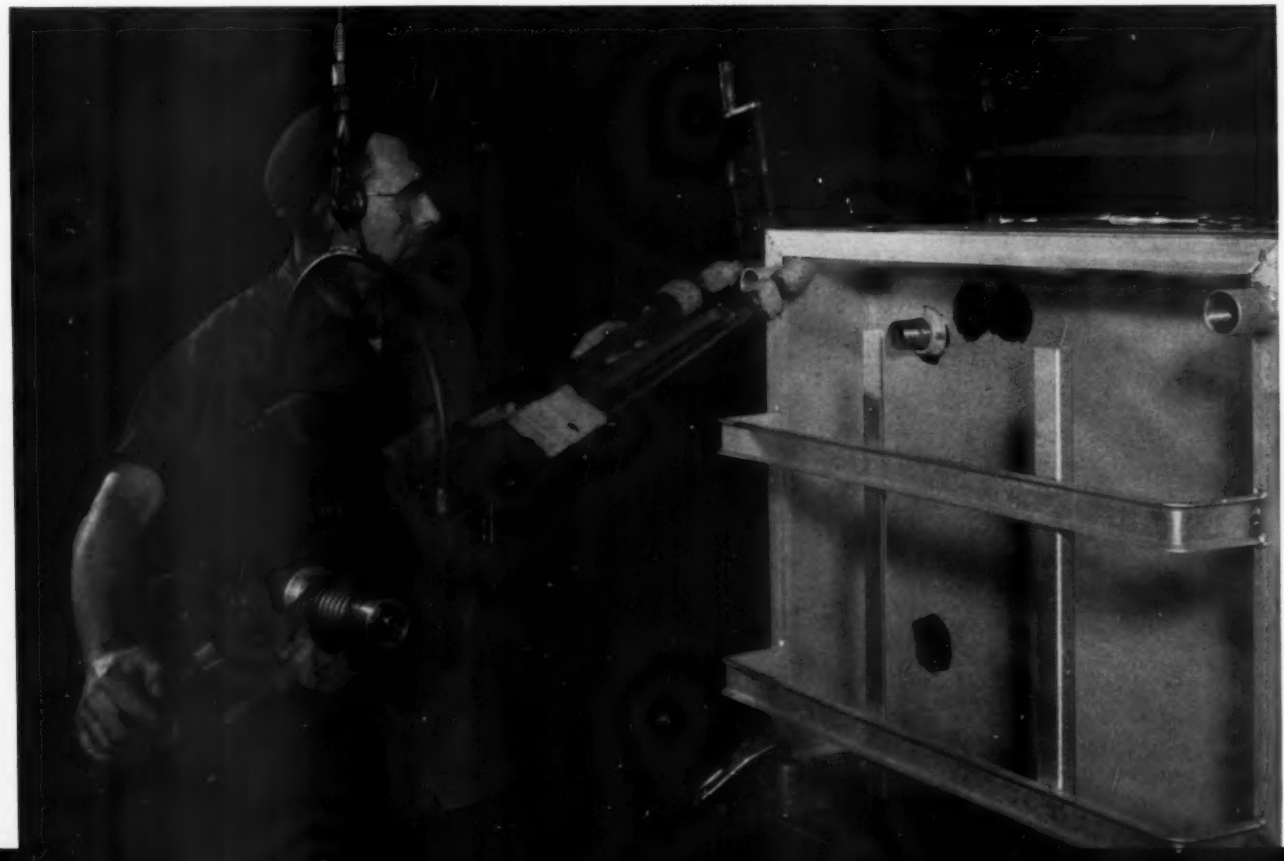
REPUBLIC ENDURO® STAINLESS STEEL SHEETS are used for exterior parts of these units. Results are maximum resistance to corrosion, exceptional ease of cleaning and a gleaming beauty that enhances the appearance of any food dispensing installation.

REPUBLIC GALVANNEALED SHEETS are used for backs, liners, and other concealed parts such as dividing walls. These parts are usually painted gray. Bastian-Blessing finds that Republic Galvannealed resists corrosion even if painted surface should be scratched or marred.

Use of Republic Stainless Steel and Galvannealed Sheets is in line with Bastian-Blessing's policy of building the finest quality into every part of their products.

The versatility and high quality of Republic Steel Sheets, along with the ease with which they can be fabricated, make them ideal for a wide range of other manufacturing applications, too. For further information, contact your Republic representative, or mail coupon today.

**SPOT WELDING.** Heavy gage Republic Galvannealed, after being formed, is spot welded to form the main frame of this soda fountain unit. Though out of sight from the public, Republic Galvannealed serves a vital function because of its high resistance to corrosion.



**FINISHED UNIT.** After taking a diversity of fabricating operations, this semi-finished Bastian-Blessing unit is almost ready for test and shipment. A final step is light buffing to bring out the satin-like surface of the Republic Stainless Steel exterior. In the completed product, eye appeal, sanitation, and ease of cleaning are all derived from use of Republic Stainless Steel Sheets.

**BRAKE FORMING.** Severe 90-degree bends do not affect the corrosion-resistance or paint-adherence qualities of Republic Galvannealed Sheets.

**SOLDERING.** With the proper flux, Republic Stainless Steel can be soldered rapidly and easily, providing a smooth, tight bond and seal.

# REPUBLIC STEEL

REPUBLIC STEEL

*World's Widest Range of Standard Steels and Steel Products*

**REPUBLIC STEEL CORPORATION**
**DEPT. MG-8137-R**
**1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO**

Please send more information on:
☐ Stainless Steel Sheets ☐ Galvannealed Sheets

Name_____ Title_____

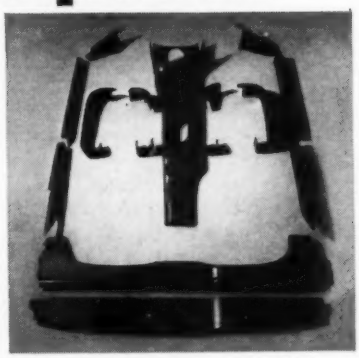
Company_____

Address_____

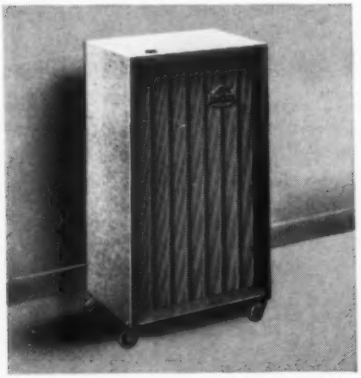
City_____ Zone____ State_____

# New Vinyl-Metal Laminate steps up styling and sales for 4 famous products

**PHILCO** rigidly tested many casing materials for its handsome new portable Seventeener TV. Only Colovin laminate could provide the twin advantages of realistic cost plus the luggage smartness of authentic alligator finish.



**THUNDERBIRD** interior presents an uninterrupted flow of leather-grained Colovin vinyl which matches exactly both upholstery and painted surfaces. Laminated parts are machined on standard equipment.



**EBCO** Oasis dehumidifier is high-styled with tweed-finish Colovin vinyl bonded to 22 gauge steel. Case is pierced, notched, drawn, formed and folded on same equipment used for metal alone. Cost of finishing is eliminated.

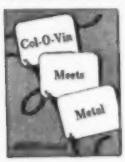
**ROBERTS-GORDON** dramatically "trademarks" its conversion burner with a custom reproduction of the actual Gordon plaid in Colovin vinyl laminate. The vinyl "costs but pennies more than previous painted components."

**Send for "Colovin Meets Metal"**

Contains laminate samples, multi-color printing, embossed effects, textures, test specifications, industrial applications, and a list of laminators to whom we supply Colovin vinyl sheeting. Send for it.

**COLOVIN®**

first and finest in vinyl laminates




**COLUMBUS COATED FABRICS CORP.**, Dept. MM-1159, **Columbus 16, Ohio**

*Please send me your brochure, "Colovin Meets Metal."*

Name_____

Company_____

Address_____

City_____ Zone____ State_____

## *from the* Editor's Mail

### Copy for new library

Gentlemen: Temco has recently established a Manufacturing Development department with headquarters in our Grand Prairie facility. Our library is located in our corporate offices, some thirty miles away, and this presents a problem in exposing our Development Group to the technical publications subscribed to by the library.

To correct this situation, we are establishing a small reference library in the Manufacturing Development department. Therefore, we will appreciate it if you will send the following controlled circulation publication to Temco Aircraft Corp., Manufacturing Development Department 136A, P. O. Box 6191, Dallas 22, Texas: "Metal Products Manufacturing."

**C. E. Howle, Engineering Senior Supervisor**
**Temco Aircraft Corp.**
**Dallas, Texas**

### From Springfield to West Springfield

Gentlemen: I have found your publication a very helpful one, and have enjoyed its receipt over the past months. I am making a change in employment which will be effective the 1st of October and hope that you will be able to continue forwarding your magazine to me at my new address. I have, to date, been receiving them at Westinghouse here at Springfield and, effective after the 1st of October, if you could forward the copies to me at the following address, it would be very much appreciated: J. A. Tracy, Research & Development Dept., Gilbert & Barker Mfg. Co., Cold Spring Ave., West Springfield, Mass.

For your information, the Gilbert & Barker Mfg. Co. are manufacturers of service station gasoline pumps, centrifugal pumps, oil burners, and a line of electronic gauging equipment.

**J. A. Tracy, Room Air Conditioner Engrg.**
**Gilbert & Barker Mfg. Co.**
**West Springfield, Mass.**

### Request from The Netherlands

Gentlemen: We are very interested in the article, "Loaded beam stress measurement," by D. C. Bowman, in METAL PRODUCTS MANUFACTURING of February, 1959, and we kindly request the blueprints, equipment lists, and instruction sheets, as announced in the postscript to the article mentioned above.

**N. V. Emailleerfabriek "de IJsel"**
**Holland**

The author promptly sent the blueprints and requested material.

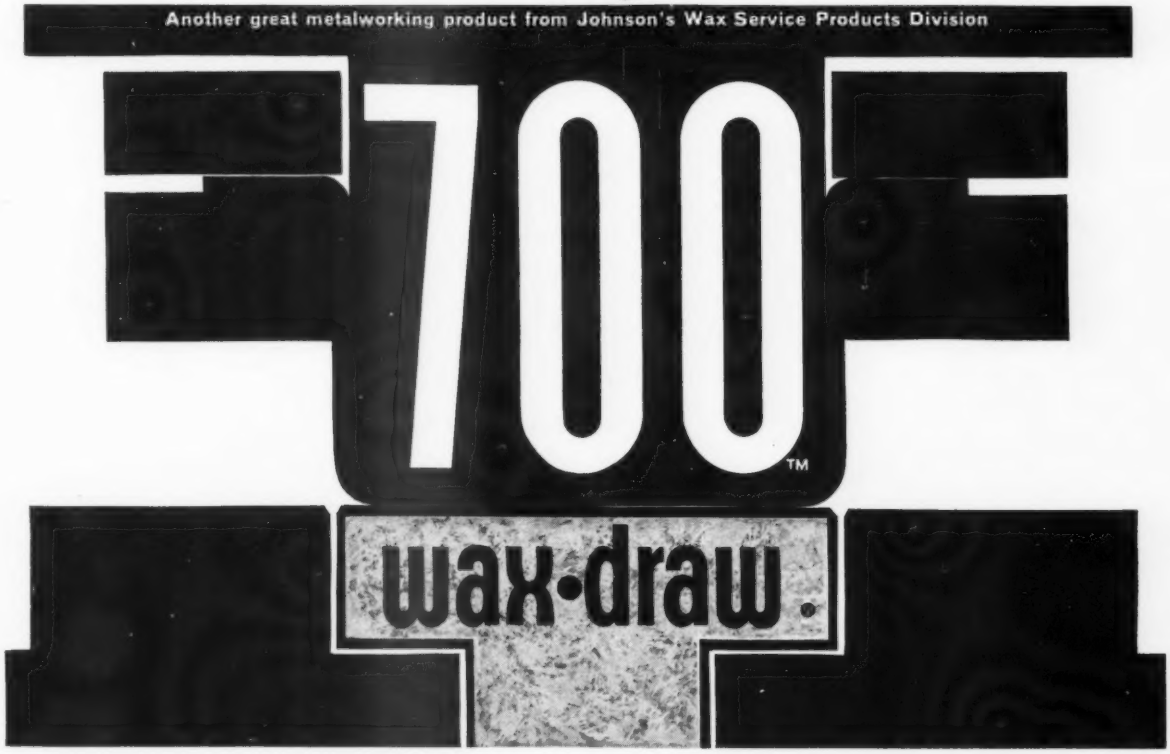
The Editors

## For the deepest draws on the toughest metals

Johnson's 700 WAX-DRAW does every draw in the shop. *Easy to apply* by roller coating, spraying, dipping, etc. Use wet or dry. Blanks can be fed directly into the press or may be pre-coated, dried and palletized. *Easy to remove,* using solvent bath, vapor degreaser, alkaline washer or even hot water alone. *Money saving.* One gallon undiluted covers 2,000 square feet. Four-to-one dilutions produce excellent results. 700 Wax Draw handles multiple draws with only one application even at pressures to 200,000 p.s.i. and temperatures to 450°F.

For further information write: JOHNSON'S WAX Racine, Wisconsin Dept. MP 11

Another great metalworking product from Johnson's Wax Service Products Division



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***washers . . .***

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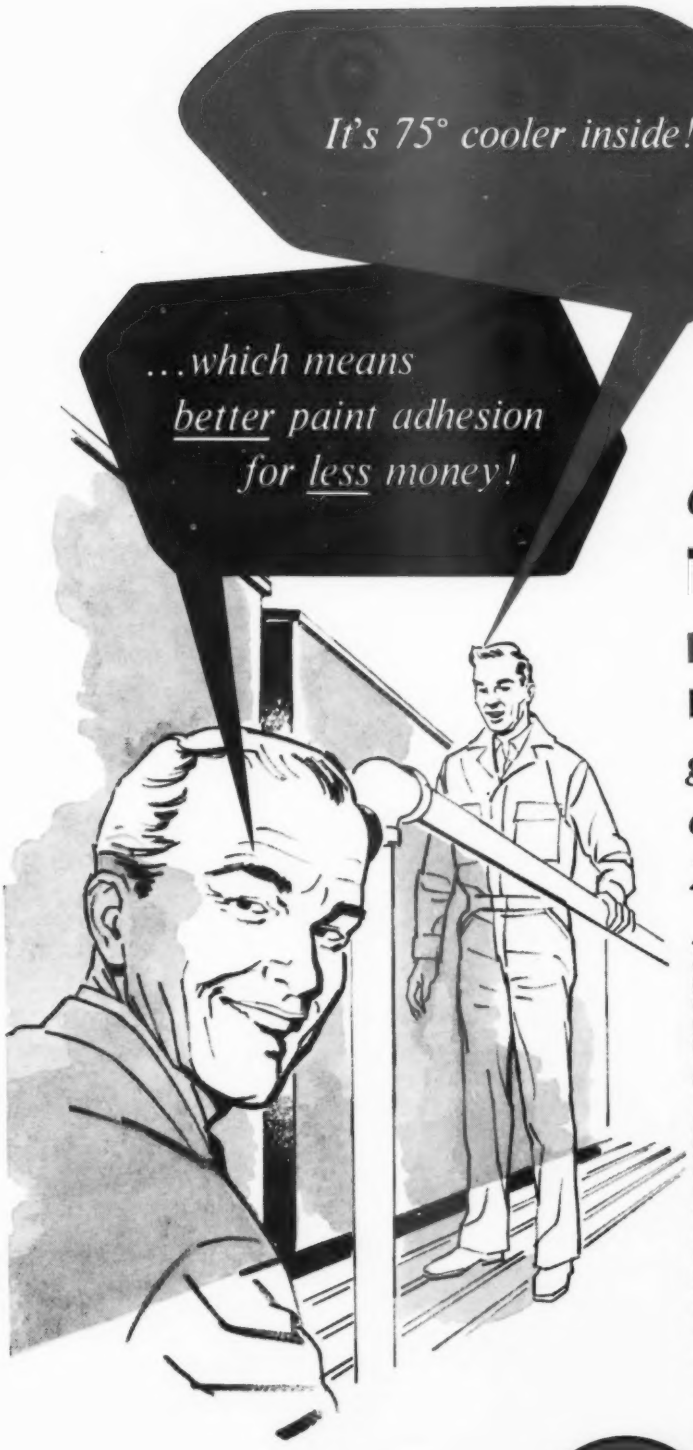



*Only new*

# TURCOAT

## LOW TEMP PHOSPHATING

*gives you up to 200 mg/sq. ft. of zinc phosphate coating in 2 short minutes at 95° F.*

The Turcoat low temperature phosphating process provides permanent paint adhesion when used at an economical, easy-to-maintain temperature of 95°F. This temperature is *lower* than that required by other "cold" phosphating processes. It is up to 75° *lower* than temperatures required by conventional phosphating processes. You save up to 75% in steam, water, electricity and downtime costs alone!

**As a base for paint,** the Turcoat low temp phosphating process provides a uniformly smooth coating of up to 200 mg/sq. ft. in two minutes at 95°F. **As a base for corrosion prevention,** it provides an 1100 mg/sq. ft. coating in just eight minutes at 95°F.

Turco has waited to announce low temperature phosphating until it was thoroughly perfected and proven, through exhaustive field testing, to be the very best. For this reason, you'll find that with this new process, just as with Turco's hundreds of other cleaning and chemical processes, you are assured of trouble-free operation, ease of control, and dedicated technical service...anytime, anywhere! Write today for the full story of Turcoat low temperature phosphating, along with Turco's phosphating reference chart. There's no cost . . . no obligation.

**TURCO PRODUCTS, INC.**

Chemical Processing Compounds

*24600 South Main Street, Wilmington, California*

*FACTORIES: Newark, Chicago, Houston, Los Angeles, London, Rotterdam, Sydney, Mexico City, Paris, Hamburg, Montreal, Manila, Naha (Okinawa)*

*Manufactured in Canada by B. W. Deane & Co., Montreal*

*Offices in all Principal Cities*

**TURCO PRODUCTS, INC.**

**24600 South Main Street, Wilmington, California**

**Please send full details on Turco's new low temperature phosphating process and Turco's phosphating reference chart, without cost or obligation.**

**NAME**_____ **TITLE (OR DEPT.)**_____

**FIRM**_____

**ADDRESS**_____

MPM

# Service is our best Salesman

*"Miss Byrd, I've got a rush order for aluminum. Get me QSM on the phone."*

Faster production is only one of the many advantages of QSM Service. Your deliveries are more reliable; quality control is more precise; service more flexible and personal; and there's less red tape to annoy you...that's because your job is completely processed—from hot metal to finished product—in a single, integrated plant. Next time, when you order aluminum, think of Quaker State.

**QUAKER STATE METALS CO. • LANCASTER, PA.**

*Division of HOWE SOUND COMPANY*

*Mill Producers of Aluminum Sheet and Coil*

# COOK'S IS A PART OF THE FASHION-FRESH LOOK OF STUDEBAKER'S *LARK*

*"A new dimension in motoring. A beauty to behold—a dream to drive."*

*And the soaring sales of the Studebaker Lark seem to prove it.*

*The spirited Lark gets a crowning touch of beauty and protection from Cook's industrial finishes. So do thousands of other products—from bobby pins to bulldozers.*

*Cook's travels the highways on millions of cars, rides the rails on rolling stock, goes down to the sea on ships and gives gleaming good looks to the housewife's kitchen appliances.*

*What about your product? Find out how Cook's industrial finishes might step up its buy appeal, and cut your finishing costs.*

COOK'S PAINTS

COOK PAINT AND VARNISH COMPANY

Kansas City, Missouri

Factories:

Kansas City • Detroit • Houston

Interstate Gets a Higher Quality Finish and Paint Mileage is More Than Doubled with

RANSBURG

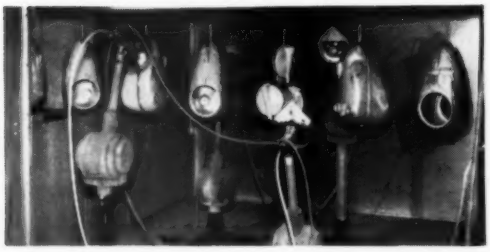
**NO. 2 PROCESS ELECTROSTATIC SPRAY PAINTING**

in finishing

COMPACT VACUUM CLEANERS

Interstate Engineering Corporation in Anaheim, Calif. switched from hand spray to Ransburg automatic Electro-Spray in the painting of their quality line of home renovating products: The COMPACT vacuum cleaner . . . the POLISH-AIRE floor polisher . . . and MAGIC DISC carpet and rug sweeper.

RESULTS? Quality of the painting improved, for with former hand spray, rejects used to run as high as 10%. That's because of Interstate's high quality standards. Now, with Electro-Spray, rejects are cut to less than 2%! This alone would have justified the change, but Ransburg Electro-Spray also provides substantial labor and material savings. One operator now does the work of two. And, with the former method, Interstate was painting only 28 sets of parts per gallon of paint. Now, they get 57 sets of parts per gallon. Think of what 50% savings would mean in YOUR finishing department.



Vacuum cleaner parts are painted with wrinkle enamel as they pass through the electrostatic spray painting area in the finishing department at Interstate Engineering Corp. Unpainted parts, entering from the right, are coated uniformly by the two Ransburg atomizing bells on either side of the line.

**NO REASON WHY YOU CAN'T DO IT, TOO!**

Let us show YOU and test-prove the advantages of automatic electrostatic spray painting on YOUR products in our complete laboratories. Call or write for our No. 2 Process brochure which shows a variety of automatic painting installations on a wide variety of products in both large and small plants. Or, if your production doesn't justify automatic painting, let us tell you about the new No. 2 Process Electrostatic Hand Gun which can be used in either conveyorized, or non-conveyorized painting.

RANSBURG

**RANSBURG**
**Electro-Coating Corp.**
Box-23122, Indianapolis 23, Indiana


## INDUSTRY MEETINGS

**AUTOMATIC MERCHANDISING**

National Automatic Merchandising Association's Convention-Exhibit, Conrad Hilton Hotel & Navy Pier, Chicago, Ill., October 31-November 3, 1959.

**AIR CONDITIONING**

The 11th Exposition of the Air Conditioning and Refrigeration Industry, Convention Hall, Atlantic City, N. J., November 2-5, 1959.

**METALS**

The 41st National Metal Exposition & Congress, International Amphitheatre, Chicago, Ill., November 2-6, 1959.

**PACKAGING**

Eighth Canadian National Packaging Exposition, Sponsored by the Packaging Association of Canada, Automotive Building, Exposition Park, Toronto, Ontario, Canada, November 3-5, 1959.

**PEI FORUM**

The Porcelain Enamel Institute's Shop Practice Forum, The Ohio State University, Columbus, Ohio, November 4-6, 1959.

**ELECTRICAL MANUFACTURERS**

National Electrical Manufacturers' Association's Annual Meeting, Traymore Hotel, Atlantic City, N. J., November 9-13, 1959.

**INDUSTRIAL DESIGN**

The American Society of Industrial Designers' Meeting, Hotel Statler, New York City, N. Y., November 12-14, 1959.

**APPLIANCE TECHNICAL CONFERENCE**

First Western Appliance Technical Conference, AIEE-Sponsored, Biltmore Hotel, Los Angeles, Calif., November 16, 1959.

**HEATING & AIR CONDITIONING**

National Warm Air Heating & Air Conditioning Association's Annual Meeting, Chase Park-Plaza Hotel, St. Louis, Mo., December 1-4, 1959.

**HOME FURNISHINGS**

International Home Furnishings Market, The Merchandise Mart, Chicago, January 4-15, 1960.

**HOUSEWARES**

National Housewares Manufacturers Association's Exhibit, Navy Pier and Drill Hall, Chicago, January 11-15, 1960.

**METALLURGY**

The Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers' Conference, Del Prado Hotel, Chicago, January 20, 1960.

**MAINTENANCE & ENGINEERING**

Plant Maintenance & Engineering Show, Convention Hall, Philadelphia, January 25-28, 1960.

# From hair pins to rockets

***Look into production savings possible with automatic***

# DESPATCH FINISHING SYSTEMS

Control panel along wall controls material flow through washing, rinsing, chromic acid treatment, finish coating on metal and finish baking.

Electro-static spray booth in finishing department of refrigerator manufacturer. Completely automatic control.

Small 3 stage washer and dry-off oven prepares small parts with maximum automation.

Finish Bake Oven in modern tractor plant shows programing of all components to expedite assembly at exit of Despatch baking oven.

When competition forces your prices down and you are casting around for a way to save your customers without losing your profit . . . look into your finishing department. For 20 years new synthetics have been altering requirements in finishing equipment. In more recent times new material handling methods have introduced new ways to organize finishing production to lower handling costs.

Through this finish production revolution, Despatch Engineers have maintained close contact with leading chemical research and development organizations. Our engineers have collaborated with basic metal manufacturers and finish coatings producers to develop processes in wide use today. Many of these developments are protected by Despatch patents.

*Our 50 years in building heat processing equipment for American industry provide a dependable background for the latest scientific applications of automation in finishing systems. You will find our experience helpful in solving your problems of material handling, washing, chromic acid treatment, finish coatings, drying and baking of any product.*

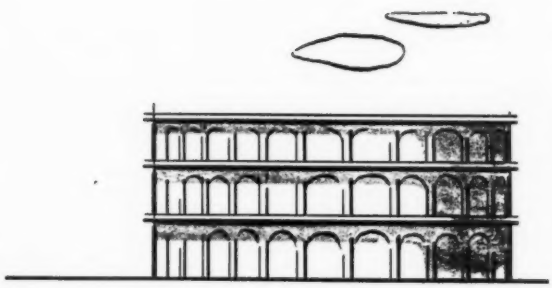
*You will find our engineers resourceful in applying their information to improving your finishes and cutting your production costs.*

***Write today*** for a resident engineer or request bulletin No. 51

DESPATCH OVEN CO.

## DESPATCH OVEN COMPANY

619 S. E. 8th Street • Minneapolis, Minn.



# this *Glass* shield,

## *while symbolic,*

represents some of the things a master craftsman can do with glass. It can be bowed to fit any desired shape, it can be drilled and shaped to exact tolerances.

It can be tempered to impart extreme resistance to impact — that is why safety regulations demand glass as a safety barrier when danger exists.

Let glass improve the utility of your product while it beautifies it.

*Let Marsco's craftsmen-engineering team impart to your product all the advantages of glass*

***Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:***

- CLOCK & TIMER CRYSTALS
- OVEN DOORS
- RADAR EQUIPMENT
- AIRCRAFT ACCESSORIES
- PHOTOGRAPHIC EQUIPMENT
- LIGHT LENSES
- DIALS & NAME PLATES
- TELEVISION EQUIPMENT
- INSTRUMENTS
- MEDICAL EQUIPMENT

*Special shapes for: Instruments, Gauges, Household and Industrial Appliances.*

Marsco

**MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.**

MODULAR APPLIANCE ARRANGEMENT INTERCHANGEABLE

# New Aluminum Forms, Finishing and Fabricating Techniques Offer New Design Possibilities in Washers, Dryers and Dishwashers

SEE NEXT THREE PAGES

REYNOLDS ALUMINUM

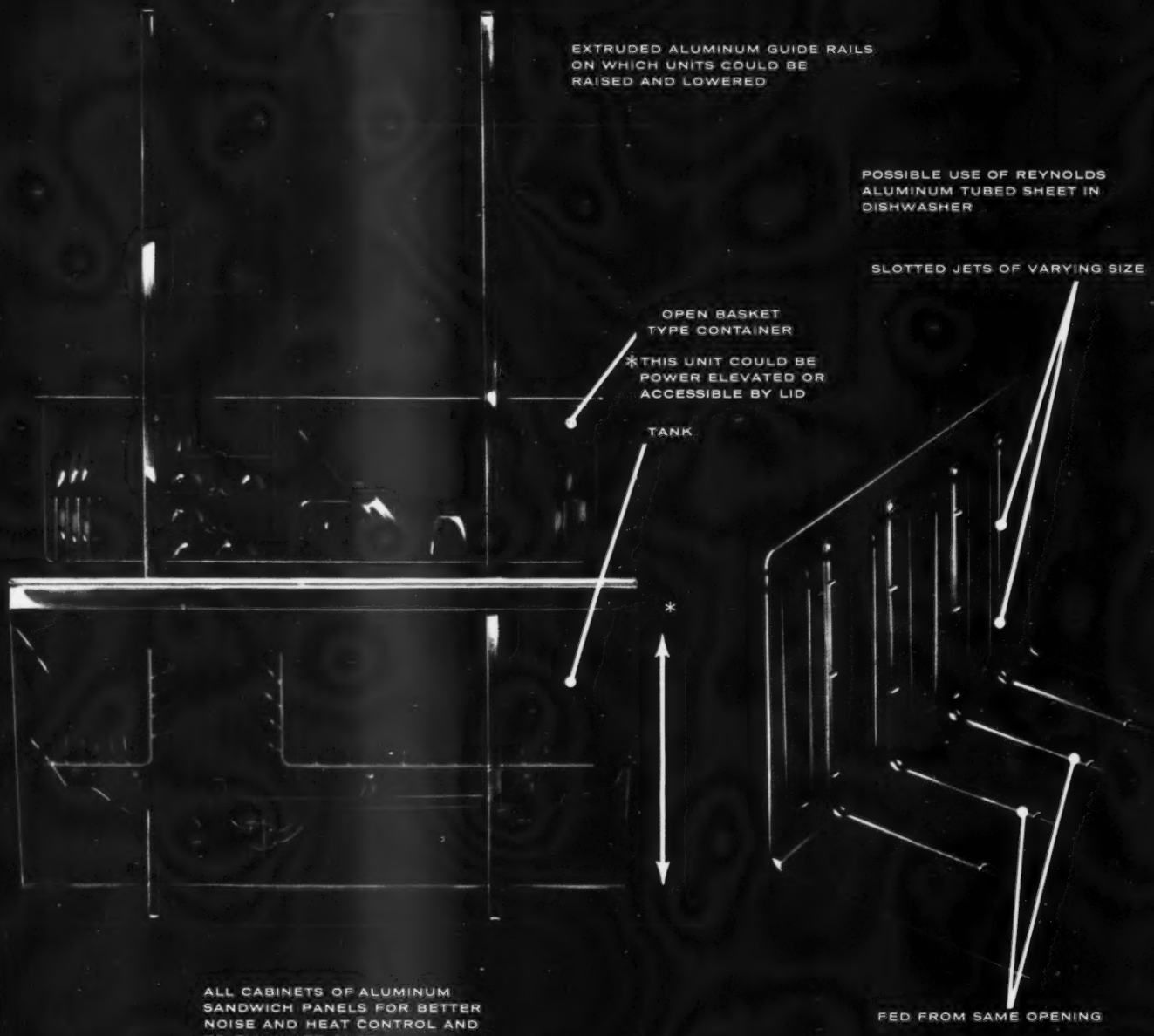
THIS UNIT CORRESPONDS WITH DISHWASHER DRAWING ON FACING PAGE AND COULD BE PLACED BACK TO BACK TO FORM ISLAND UNIT

COULD HAVE ADJUSTABLE COUNTER HEIGHT

WASHER-DRYER UNIT ELEVATES TO COUNTER HEIGHT WITHIN EXTRUDED ALUMINUM FRAME FOR LOADING

# WASHER-DRYER COMBINATION

REYNOLDS ALUMINUM


EXTRUDED ALUMINUM GUIDE RAILS ON WHICH UNITS COULD BE RAISED AND LOWERED
POSSIBLE USE OF REYNOLDS ALUMINUM TUBED SHEET IN DISHWASHER
SLOTTED JETS OF VARYING SIZE
OPEN BASKET TYPE CONTAINER
*THIS UNIT COULD BE POWER ELEVATED OR ACCESSIBLE BY LID
TANK
*
ALL CABINETS OF ALUMINUM SANDWICH PANELS FOR BETTER NOISE AND HEAT CONTROL AND TO ELIMINATE RUST
FED FROM SAME OPENING

# MODULAR UNIT DISHWASHER

How aluminum
offers washer, dryer and dishwasher manufacturers

# VERSATILITY and ECONOMY

## in styling, fabricating and finishing

The sketches on the preceding pages by Reynolds Styling and Design Department suggest a few of the many new ways that strong, lightweight, rustfree aluminum can contribute to modern washer, dryer and dishwasher design. There are almost unlimited combinations of design possibilities with aluminum, because aluminum is the most versatile of all metals. Here are a few examples of styling, fabricating and finishing techniques both possible and practical with aluminum.

**In fabrication,** aluminum can be drawn, extruded, cast, stamped, roll formed, expanded, perforated or pierced. A wide choice of *attachment* methods is also available: welding, mechanical fasteners, tabs and cast pegs, bolts and rivets, metal stitching and epoxy resin adhesives are among the most common. In *finishing,* a wide variety of sales appealing colors can be easily obtained through painting and color anodizing. A variety of surface textures is also available. This versatility also points the way to manufacturing economies. For instance, modern techniques in design, tooling and assembly permit higher rates of production with aluminum at low cost. Aluminum extrusions, with their nominal die costs, are a good example. Aluminum's light weight cuts costs of certain reinforcing or supporting parts. Lightweight aluminum also lowers handling and shipping costs.

**Economies in finishing** are also worth investigating. One-Side-Bright aluminum can be used to eliminate costly buffing operations. Prepainted aluminum sheet (Reynolds Colorweld Aluminum Coil) is ideal for applications calling for a painted stock. Colorweld Aluminum Coil can be formed and fabricated.

Embossed or brush finished aluminum sheet, in standard or special designs, requires no additional finishing operations—permits low cost styling "change-overs." Laminates of aluminum with vinyl plastics or wood cut costs and weight in sandwich panel and other decorative or functional part construction.

New ideas for using aluminum in refrigerators and other appliances are being developed constantly. Reynolds Styling and Design and Product Development groups are ready to assist your own stylists and engineers in putting the newest and best aluminum forms, finishes and fabricating techniques to work in your products. Reynolds fabricating facilities are also at your service to assist in actual fabrication of finished aluminum parts. For highest quality aluminum mill products or for details on these services, contact your nearest Reynolds branch office or write *Reynolds Metals Company, P.O. Box 2346-AX, Richmond 18, Virginia.*

**NOTE: Before you make or buy any appliance part, have it designed and priced in aluminum. Remember—basic material costs do not determine part costs. New techniques and processes—applicable only to aluminum—can often give you a better product at a lower final cost.**

# REYNOLDS ALUMINUM

Watch Reynolds TV shows—"ALL STAR GOLF" and "ADVENTURES IN PARADISE"—ABC-TV

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

# THE finish LINE

## MORE ABOUT SERVICE...

*First, a comment by S. J. RANDALL,* president and managing director of General Steel Wares Limited, Canada's largest independent appliance and housewares manufacturer (annual sales volume over $36 million).

### The potent word — service

Said Randall, "When all else is equal, the only advantage any salesman has left is service — service from him, service from his company, service from management. In this business we talk about prices; we are very competitive, very competitive. I say that in our industry the biggest thing we have to offer is service. That should be the number one key . . . When terms, prices, quality and performance are approximately equal, service is the only deciding factor . . .

"For the next hundred years, you are going to have the same conditions you have today, the same competition, the same fellows selling the products at lower prices than you and probably giving better service. If you don't give service, you're not going to get the business. The only difference between insurance policies is the color, and yet the highest paid salesmen in industry work for insurance companies because they know the application of service."

---

### A definite objective

*Second comes a letter from A. R. BALSAMO,* branch manager at Elgin, Illinois, for Dictaphone Corporation, a company that, according to our experience, knows how to handle service. You pay for it, but you get competent service.

Said Balsamo, "May I offer some comment and praise on your 'The Finish Line' editorial in the July issue of MPM. I have been carrying this article in my pocket for the last month showing it to my customers and friends.

"The editorial titled 'Service' is certainly food for thought for any individual or businessman contemplating the purchase of household appliances, office equipment, or any other commodity. With the ever-increasing complexity of small appliances and the increased competition for the sale thereof, many more people will be giving more thought to the question of service.

**"A CAMEL IS A HORSE THAT WAS DESIGNED BY A COMMITTEE."**

**from a statement by C. K. Rieger, Vice President Marketing Services, General Electric Company**

---

**"AN EXPERT IS ONE WHO HELPS YOU GO WRONG WITH CONFIDENCE."**

**from a statement by S. J. Randall, President and Managing Director, General Steel Wares, Ltd.**

"Because of our corporation's unique company-owned manufacturing sales and servicing facilities, we are able to provide service on a far more reliable, dependable, and economic basis. In the small appliance field where service is handled by dealerships, it is very difficult to control the quality of this service. That is one of the reasons why we maintain our own company-owned service department.

"Perhaps our company policy regarding this can best be summed up by our OBJECTIVE, which is as follows:

*"We have an objective and we practice it.*

"Our objective is to serve men and women in business, the professions, and the government the world over with the simplest and finest dictating equipment.

"By concentrating skilled teamwork on the design, manufacturing sales and servicing of dictating and recording equipment.

"By creating a wider understanding and acceptance of the Dictaphone idea and the superiority of Dictaphone products.

"So that our business may grow steadily and reward its owners and employees not only well but increasingly so.

"Always remembering 'HE WHO SERVES BEST PROFITS MOST.'

"Congratulations once again for such an interesting and provocative editorial."

---

*See the feature article, "Appliance Service . . . organized for profit," on Page 29, this issue.*

# Spray stencil process speeds production

THE POPULARITY of an aerosol for household uses has found its counterpart in industrial plants. Stenciling of steel drums, corrugated cartons and painted metal surfaces has become a quick, easy, clean, and inexpensive operation with stencil ink in an aerosol container.

Developed by Reynolds Ink Co., Cleveland, Ohio, the ink is simply sprayed on any surface for convenient marking. It is specially formulated for spray application to give opacity and to dry in seconds with no smear, smudge, or curtaining. The ink comes in a choice of nine colors, including red, orange, yellow, two shades of blue, green, aluminum, black and white.

Before using, the can should be well agitated. For best results, it should be held not more than eight inches from the stencil. The user should spray slowly across the stencil once or twice. To avoid possible clogging, the can is turned upside down after completing each job, and is used at normal room temperature for normal operating pressure. The maximum temperature for can exposure is 120° F.

*Stenciling steel drums is no problem with the Reynolds spray bomb. For best results, the can is held not more than eight inches from the drum, and moved slowly across the stencil once or twice.*

Reynolds also has developed a quick-drying aerosol spray for obliterating marks. This spray blocks out old stenciling labels, printing, crayoned and painted surfaces. The cover-spray can should be held 10 or 12 inches from the surface, otherwise sagging will result. Both the stencil ink and the cover spray are waterproof.

*Here, a model number is stenciled on a snowplow blade. The stencil spray is very opaque, and drys in a matter of seconds. The ink can be applied to any painted metal surface. Room temperature is important for normal operating pressure.*

## United Wallpaper Changes Its Name

United Wallpaper, Inc., Chicago, changed its name to DeSoto Chemical Coatings, Inc. on Oct. 28, pending approval of the change at the annual stockholders meeting. According to President S. U. Greenberg, "The new name will better identify the company's entire business. Although we are the nation's largest wallpaper manufacturer, our sales of paint, resin, varnish, and chemicals account for a greater part of our volume."

## Permaglas Produces Five-Millionth Water Heater

On Oct. 8, the Permaglas Division of A. O. Smith Corp. produced its five-millionth glass-lined water heater. The milestone was reached in a period of 12 years. Present production rates are at approximately 750,000 annually.

EXCLUSIVE MPM PHOTO

*Pictured at the end of the production line as the five-millionth water heater came off the line are: (L-r) Donald Miller, mgr.-consumer products; Miss Permaglas; Mayor Ed Madison of Kankakee; and J. H. Brinker, vice president and general manager.*

## Westinghouse Forms New Portable Appliance Division

Formation of a new Westinghouse portable appliance division, to be headed by vice president Richard J. Sargent, was announced by Chris J. Witting, vice president in charge of consumer products. Witting also announced the appointment of O. H. Yoxsimer as general manger of the company's television-radio division at Metuchen, N.J., and Richard S. Sheetz as general manager of the East Springfield, Mass. appliance plant to succeed Yoxsimer.

**News about COATINGS FOR METALS**

*from Metal & Thermit Corporation*

# Textured vinyl finishes now produced with sprayed coatings

To get a textured vinyl finish, designers are no longer restricted to laminated types. Two recent M&T developments in *sprayed* vinyl coatings make such appealing finishes especially easy to adopt. Actually, they *widen* the variety of patterns practical for metal panels, cases, housings and other parts.

**TWO WAYS TO FINISH**

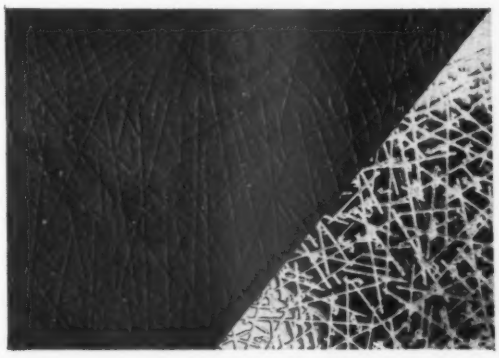
Texture is produced chemically with *Unichrome Coating 6400*. Sprayed on smooth metal sheets and shapes, this coating gives a handsomely textured finish with warmth and leather-like appearance.

*Unichrome Coating 6440* was developed for use on mill-patterned steel or aluminum, now becoming available in an increasing number of extremely attractive patterns. This coating does not alter the profile of the pattern. Whether applied thick or thin, it will faithfully mirror even the most delicate design rolled into the metal.

**EXCEPTIONAL DURABILITY**

Both of these sprayed vinyl coatings prove up to ten times more wear resistant than the usual baked textured enamel. In a recent evaluation for food shelves, M&T's *Coating 6400* withstood a half million "rubs" from canned goods and still looked new; the shelf with baked enamel showed wear after only 30,000 abrading strokes from the can.

Unichrome Coating 6440, whether sprayed thick or thin, produces an exact replica of the metal pattern beneath it; also contributes warmth, color, and unusual protection.



Unichrome Coating 6400 sprayed on smooth metal develops a texture with the appearance of luxurious grained leather.

The inherent chemical resistance in these vinyl coatings also protects against stains and corrosion. Their insulating qualities mean warmth to the touch, and also aid in sound-deadening.

As for production benefits, the sprayed finish eliminates the expensive scrap loss incurred with laminates; it also eliminates seam problems at joints.

For more details, write METAL & THERMIT CORPORATION, Rahway, N. J.

**coatings and finishes**

METAL & THERMIT CORPORATION

# DURA-PLATE INCREASES DURABILITY OF CHROME-PLATED PARTS BY OVER 50%

Dura-Plate, the new Brown-Lipe-Chapin process, gives chrome-plated parts a new dimension in durability.

New Dura-Plate consists of a duplex nickel base *plus* a thicker layer of crack-free chromium. Two-thirds of the initial layer is semi-bright nickel which is columnar in structure. The remaining one-third layer is bright nickel with a laminar structure. On top of this is a layer of chromium up to five times normal thicknesses. Together these three elements provide a higher degree of resistance to corrosion than has ever been achieved by conventional processes.

After 18-hour CASS Tests and actual field surveys with Dura-Plated parts, results showed that these parts resisted corrosion up to 50% more than companion parts plated by conventional methods.

The brilliance of Dura-Plate plus its outstanding resistance to corrosion adds important sales advantages to consumer products and opens up new applications for chrome-plated parts.

*OUTDOOR LIVING:* Dura-Plated parts can withstand the rigors of the most severe climate conditions, making it ideal for outdoor furniture, grilles, and outdoor-living accessories.

*APPLIANCES:* The lustrous brilliance of Dura-Plate parts provide extra sales appeal to ranges, refrigerators, toasters, washers and dryers. Grease detergents and other household cleaning agents will not mar the beauty of parts plated with Dura-Plate.

*AUTOMOTIVE:* Sparkling trim of Dura-Plate will stand up under the punishment of salt, snow and water, providing longer lasting protection for the beauty of automotive bright work.

*In addition to Dura-Plate, Brown-Lipe-Chapin offers mass production facilities for die casting, all metal stampings, anodizing, rolled sections, polishing and painting. For further information, call or write Brown-Lipe-Chapin, Syracuse, New York.*

GM GENERAL MOTORS

RELIABILITY by BROWN·LIPE·CHAPIN

DIVISION OF GENERAL MOTORS CORPORATION

# IN PRODUCT AFTER PRODUCT AFTER PRODUCT . . . WEIRTON HOT- AND COLD-ROLLED SHEET

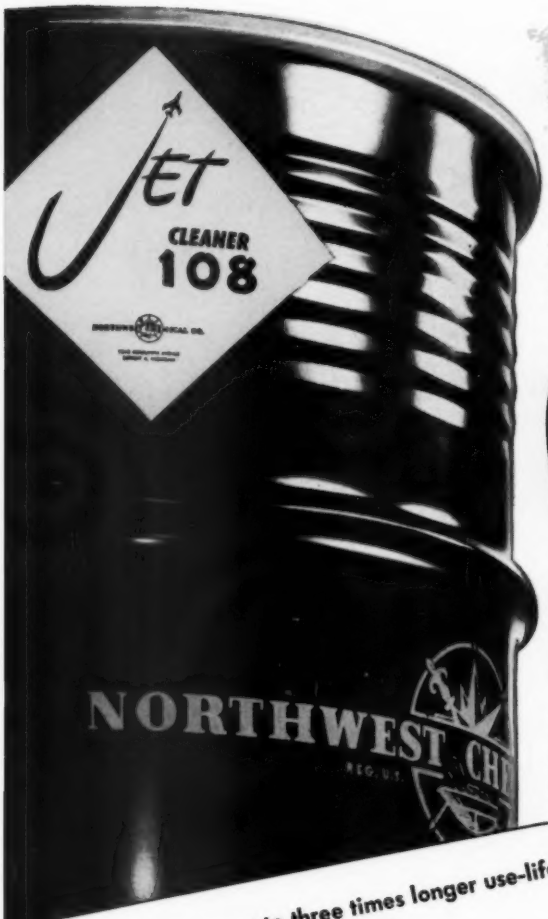
Is your product as complicated as automobile sheet metalwork? Or as tough to form as a portable TV cabinet? Or as dependent on good looks as laundry equipment?

Then Weirton hot- or cold-rolled sheet is for you, too. It brings you the triple advantages of uniform gauge, uniform strength, uniform ductility. It holds up under your toughest fabrication steps, helps you turn out a better product at lower cost. And it'll prove itself in your product, just as it has in thousands of others.

Weirton produces top quality sheets to serve the needs of modern fabrication. For prompt and complete information, just phone or write Weirton Steel Company, Dept. R-4, Weirton, West Virginia.

WEIRTON STEEL COMPANY

**WEIRTON STEEL COMPANY**
WEIRTON, WEST VIRGINIA
a division of
NATIONAL STEEL CORPORATION




# ANNOUNCING JET 108

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- Gives up to three times longer use-life than competitive products.
- Better cleaning through unusually potent penetrants, surfactants and dispersing agents.
- Carries heavy dirt load without redeposition.
- Higher the concentration, lower the foaming.
- For use on all ferrous and non-ferrous metals except aluminum.
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- Easily removes drawing compounds, oils, and greases.
- An effective rust-inhibitor for in-plant use.
- Ideal for use following soak cleaners.
- An easily handled, moist, granular alkali base material.
- Non-Toxic, dustless, non-caking.
- No disposal problem.

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Hommel research means more to you than color matching. Hommel oxides are tailor-made to meet your most demanding specifications. And they're stable over a wider firing range. Combine these quality oxides with Hommel cover coats and you have an unbeatable pair . . . assuring efficient, trouble-free and satisfying production.

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WHAT'S YOUR

A.M.

PROBLEM?

A.M. (Air Movement) is a source of new and bigger problems for the air conditioning, heating, ventilating and refrigeration manufacturer. However, we have an answer for one of your headaches —a *reliable* source for blower housings. DE-STA-CO offers you all these advantages:

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- Broad range. For wheels 3¼" to 9⅝" diameter, all widths.
- Fast delivery. Many in stock, both parts and assemblies.
- Adaptations often practical. For your special purpose housing consult us on a variation of a DE-STA-CO Standard and SAVE!

Write for literature and prints or send us your drawings and quantity needed.

A DE-STA-CO Product

DETROIT STAMPING COMPANY

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Serving air conditioning, refrigerating, heating and ventilating industries for 40 years

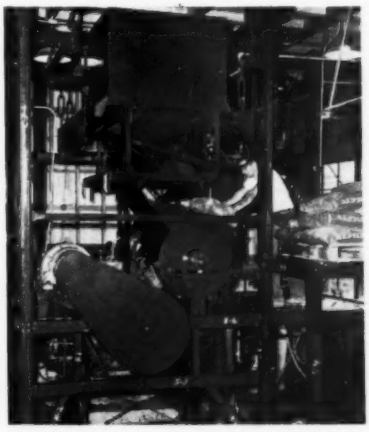

# New balancing ring for automatic washers

NORGE, IN ITS 1960 LINE, employs a wash basket of a new design. The objective was to produce a basket of a larger capacity without increasing the overall size of the washer cabinet. By using a concrete weight ring cast into the basket collar, the space utilized by the ring, in the previous design, was converted to usable capacity within the new wash basket.

The company has employed concrete weights with much success in balancing its new horizontal washer-dryer announced a year ago. In the new wash basket design, the weight embodies a new stamped channel ring that is partially filled with concrete, cast around a steel wire reinforcing core. The ⅛-inch wire core is formed in a circle and the ends are joined by spot welding. Supporting legs for the rings are formed and welded at different intervals to insure that the steel core will be correctly positioned in the concrete weight ring. The concrete is cast after the stamping is spot welded to the wash basket and the complete assembly coated with porcelain enamel. In setting, the concrete bonds to the porcelain enamel surface, but is also held in place by a retaining lip on the channel top that forms a mechanical interlock, preventing a faulty casting from dislodging during the spin cycle. The concrete weight distribution will tolerate a greater out of balance condition, and is essential, as the improved basket design accommodates a ten-pound wash load.

The concrete mix is composed of three parts of aggregate (¼-inch sand, commercial specifications) to one part of cement, and 1 per cent of calcium chloride to promote rapid setting. Twenty-four pounds of water are added to a 400-pound mix. Preparation of the mix is done in the hopper mixer setup used in connection with the scales for weighing the ingredients. Mixing of the concrete requires ten minutes prior to casting the material. Baskets arriving at the casting setup, with the wire assembly in place, are positioned in a rotating fixture where a metered amount of mix is discharged into the channel. The completed assembly is then vibrated to position the mix at the correct level, just below the row of holes that pierce the inner wall of the channel. The assembly is conveyed to a balancing station where the concrete is troweled and the wash basket statically balanced to specifications. The wash basket is stored on a conveyor for 2½ hours, thus allowing time for set and bonding of the concrete to the porcelain enamel. Upon completion of this time cycle, the assembly is removed from the conveyor and the concrete surface brushed for removal of loose particles. The wash basket is then cleaned and thoroughly inspected.

With the process described, it is possible to cast concrete weights in 150 baskets an hour, thus keeping pace with the other production operations. Extensive tests have proved the new design to function well, indicating that the benefits anticipated will be fully realized.



*(Above) — After concrete is cast in basket rings, the assembly is set in this fixture for static balancing.*

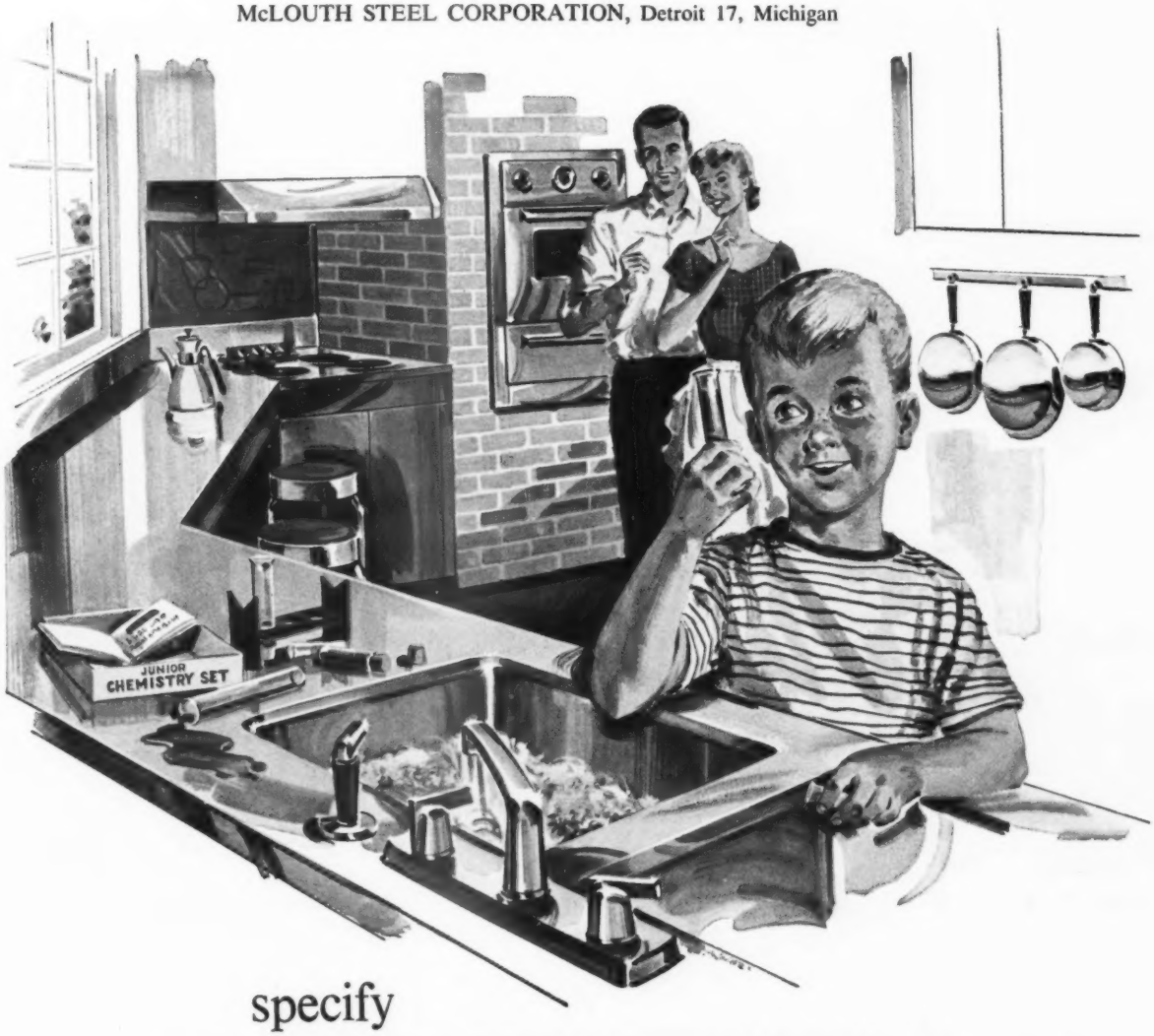
*View of the setup for mixing batches of concrete. Air-operated setup for casting the concrete inside basket top rings is below the mixer.*

# carefree is stainless steel

The gleaming efficiency of Stainless housewares is a joy to every woman. Everything made of Stainless Steel cleans with ease, lasts a lifetime and brightens-up the home.

No other metal offers the freedom of design and fabrication, economy of care and the durable beauty that serves and sells like Stainless Steel.

McLOUTH STEEL CORPORATION, Detroit 17, Michigan

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**McLOUTH STAINLESS STEEL**

HIGH QUALITY SHEET AND STRIP

for homes and home products

# AUTOMATIC CONTROL

If automatic control is the heart of your product's performance, it will pay you to rely on "controls specialists." At White-Rodgers, controls are our only business . . . built to assure accurate performance for the life of your equipment.

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231

AN MPM STAFF REPORT

# APPLIANCE SERVICE . . . . organized for profit

A UNIQUE APPLIANCE SERVICE organization, with headquarters in Los Angeles, is perhaps the first and assuredly the largest of its type in existence. Known as the Abbot Appliance Service Company, it provides appliance service and repair for national appliance manufacturers who have warranty contracts to fulfill, and out-of-warranty service for all types of gas and electric appliances. It operates throughout the Southern California area, as far north as San Francisco, and inland to Sacramento.

From its central headquarters in Los Angeles, Abbot has spread out into numerous localized branch or franchise service centers, all operating under the Abbot name, all employing Abbot-trained personnel, and all using Abbot-leased equipment.

*Service trucks provide working space as well as inventory. Each driver packs his own equipment to suit his needs. In case of emergency, he is within radio distance of the warehouse and other Abbot drivers.*

Each branch service depot has a service manager and one full-time order department phone operator. Each is equipped with at least three radio-equipped service trucks with trained service men to drive them. Each branch, or franchise, has its own radio control center. Each carries a minimum parts inventory of approximately $20,000, and each truck carries its own service inventory of approximately $3,500 in parts.

Every branch automatically acquires the in-warranty business of the national appliance manufacturers Abbot Central has contracted to serve.

### A local business, centrally controlled

Each branch operates independently on out-of-warranty business, but its inventory is continuously controlled by IBM equipment in the central Abbot office, where approximately $250,000 worth of parts are tabulated and warehoused. Nearly all of the equipment in use at each branch — trucks, radio, etc. — are leased from Abbot-central and, although they are all labeled "Abbot Appliance Service Company," each truck operator and each branch operation is essentially a local one in the area where the services are performed.

The current territorial breakdown of branch locations includes five major territories in Los Angeles with branch

*(Right)—Without IBM tabulating equipment and a nearly-foolproof coding system for parts, large and small, it is impossible to maintain running inventory records and provide manufacturers with accurate parts-failure reports based upon actual field experience. With these parts-failure reports, manufacturers can correct many warranty-service problems at their source, the factory.*

*(Below) — To fulfill the demands of guarantee for appliance manufacturers, all kinds of replacements for all types of appliances are warehoused, including porcelain panels for gas ranges.*

*President Mayers keeps a tight check on the number of service calls required each day in each area, alert to the need for increasing or decreasing equipment and personnel. All branches, warehouses, and drivers are linked to the central office in downtown Los Angeles by two-way radio. The office can route or re-route any serviceman-driver, check with him on any policy matter, or direct him to emergency sources of supply in a matter of minutes.*

Headquarters of the Abbot Appliance Service Company in Los Angeles occupies about 20,000 sq. ft. of a loft and warehouse located in the industrial part of the city. Now an independent corporation, the company began as the service operation for Mission Appliance Corp., a manufacturer of gas water heaters, electric water heaters, gas wall heaters, etc., and Utility Appliance Corp., manufacturers of forced air furnaces, air conditioning units, and for Utility's subsidiary, Gaffers & Sattler, manufacturers of gas ranges.

Original capital investment of the company was $20,000 set aside in the summer of 1957. But by October, 1957, the little captive company had evolved a branch of its own in San Diego, California. Today, this San Diego branch offices located near the heart of each, a major branch in San Diego (the original test area for a branch service depot), and branches in Sacramento, San Francisco, Van Nuys, Puente, Compton, and Santa Ana. Other branches will soon be opened in Fresno and San Bernardino, California.

*Each branch has a local phone number, toll free in the area it serves. Local calls are automatically relayed directly to the central order department in downtown Los Angeles. Two girls normally handle upwards from 2500 calls per month in the Los Angeles area alone.*

*All invoicing is carried on by pre-punched* IBM *cards, providing the company with a continuing inventory, not only on the millions of nuts, bolts, screws, electrical parts, porcelain panels, and thermostats, but on the inventory of each manufacturer.*

alone occupies its own 2,000 sq. ft. warehouse and office building, maintains a $45,000 inventory, and operates a fleet of five radio-controlled service trucks.

**Forty per cent of business is out-of-warranty**

Like all Abbot branches, San Diego's big service business is still in-warranty, but it services appliances (gas and electric) for eight national appliance manufacturers. Out-of-warranty calls account for about 40 per cent of its gross business with this percentage growing rapidly.

In line with the continuation of San Diego as a test area, Ed Mayers, company president, has now initiated a mobile service unit . . . a modern radio-controlled "clinic" equipped with a complete workshop containing its own generator, drill press, grinder, test equipment, etc. Supplies carried include a $5000 parts inventory, including transmissions for washing machines, and even a supply of freon gas for ailing refrigerators.

With all accounting procedures, parts inventories, warehousing, leasing, etc., controlled by IBM equipment in Abbot's Los Angeles headquarters, these mobile units can put a trained serviceman in business for himself with a minimum investment. A serviceman thus operating for himself buys his calls each day from the Abbot branch office in the general area he wants to serve. As an average, he can handle eight calls per day at a daily gross of $160. With 22 working days per month, he can clear $1,000 per month. His investment is $4,000, the cost of his parts inventory.

The Abbot Company guarantees the serviceman eight calls per day, for which he pays $2.50 each. He pays $300 per month rent for the 10 ft. walk-in van equipped with all essential tools except the small hand tools. Average charge for a housecall is $10 plus replacement parts when necessary. Parts might average $10 per call. The serviceman buys them from Abbot at a discount price and can sell them at a set retail price, or even less, and still realize a profit.

In overall perspective, the Abbot Appliance Service Company may be setting the pattern for service organizations to come. As home appliances become more and more complex, requiring a greater array of test equipment for proper servicing, the corner Fix-It shop is going to become less and less able to cope with service problems.

*Abbot-San Diego, test depot for the service company since its inception, is currently testing a new departure in home appliance service — a traveling machine shop, fully equipped to perform any kind of appliance repair in one call.*

## Do *Your* Dealers Lose Money on In-Warranty Service?

Appliance dealers do not have to lose money on in-warranty service. Rather, they should include from 3 to 5 per cent for this in figuring the in-product cost.

W. B. Creech, manager of the Westinghouse appliance service division, told this to a National Appliance & Radio-TV Dealers Assn. "Profit and Management" Clinic of the Greater Rockford Appliance Dealers Assn. For a dealer to say he has to lose money on in-warranty service is like saying, "you have to lose money in the appliance business," he stated.

In-warranty service is an expense item just like heat, light, rent, and salaries, he said, and "I don't hear anyone saying you have to lose money on any of these retail functions."

He also said that, if the in-warranty cost runs over 5 per cent, the dealer should check two things: first: is he handling a line that requires too much service; and is the service operation efficient?

Creech said that a service truck should be equipped with a parts stock with a net value of between $450 and $750 which allows the serviceman to service a complete major appliance line. Adequate stocks on the service truck mean increasing service completions by as much as 30 per cent and reducing callbacks to almost zero.

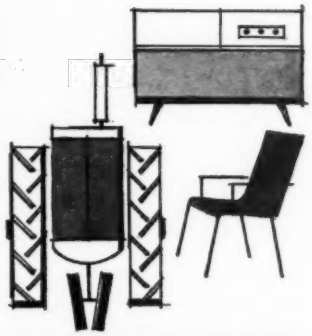
The dealer who handles and tries to service too many different brand lines, he said, cannot carry adequate parts stocks on his service trucks and therefore increases his costs of doing business with no chance for increased revenue.

A servicing dealer should get help from a manufacturer or distributor to offset excessive product failure but not to subsidize a weak service department or poor training of servicemen.

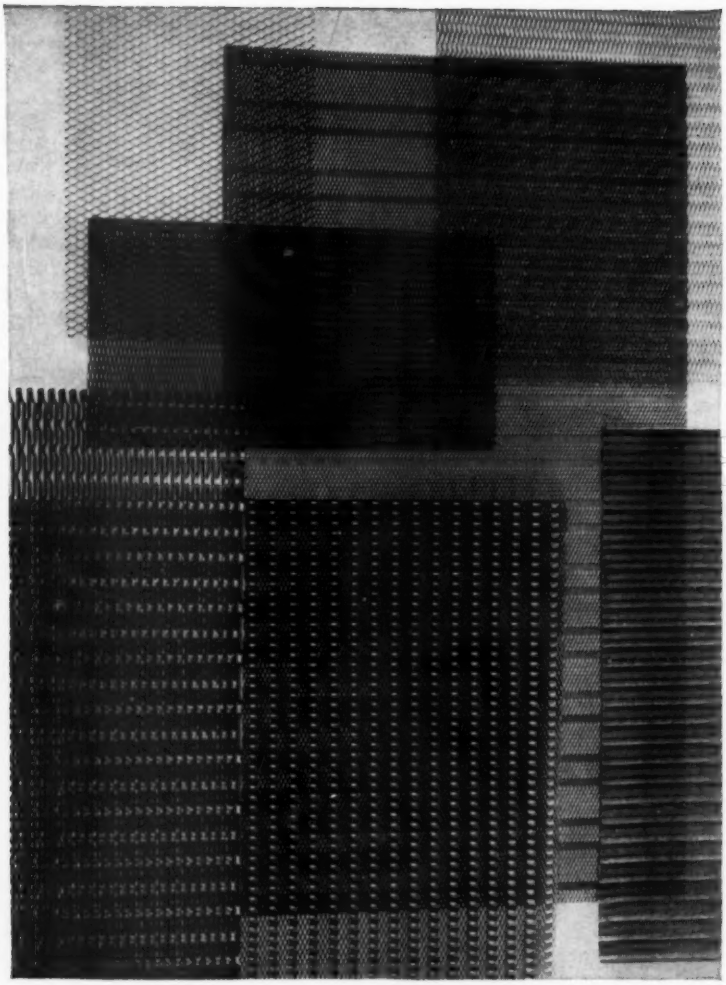
If the dealer's problem in making in-warranty service a profitable operation lies in organization, efficiency or poor accounting, Creech suggested that retail management might spend more time analyzing and improving this, and less "on trips to Las Vegas, Miami, Europe, etc."

In appliance service, he said, retailers have the finest kind of an opportunity to create their own prestige, character or image in the customer's mind. Because in service, there is the opportunity to go directly into the customer's home several times a year in rendering service and, if this is done well, promptly and courteously, it builds a highly-profitable business.

*Inland "job-tailored"*
*Cold Rolled Sheets work better*



# product: EXPANDED METAL



## problem:

the production of expanded metal panels for a wide variety of products ranging from automobiles to air conditioners, tractors to phonographs, stoves to patio furniture, television receivers and lawn mowers. These to be fabricated from decorator designs in an almost limitless range of complexity. Equipment, created specifically for the purpose, functions at highest efficiency and economy with coil steel which is cut and expanded. The often enormous stretch of quite narrow strands could cause breakage and rejection of the entire piece.

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# Blanking and slitting done at high speed

**coil steel is cut to sizes for electrical appliance stampings largely by flying shear feeding to automatic stacker, and blanks for drawing receive quick drying lubricant in dip tank line**

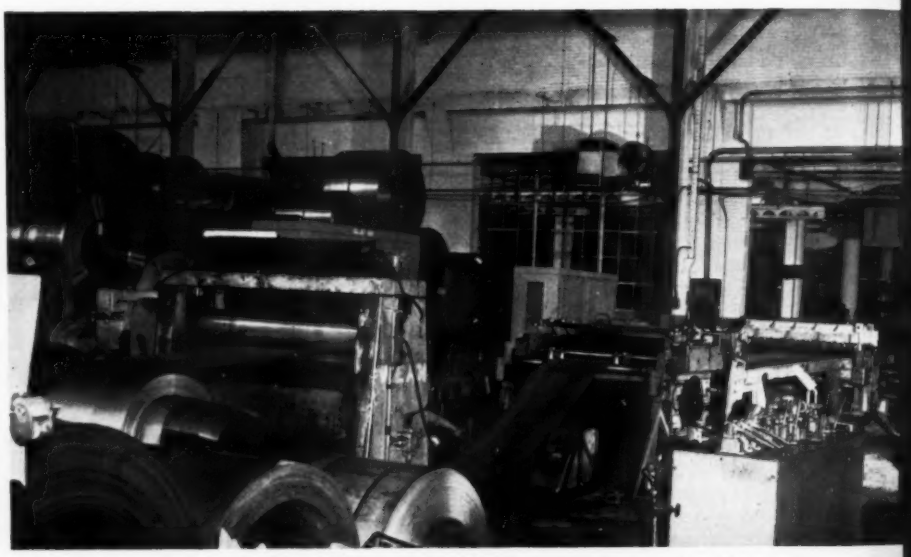
*by H. W. Schulze* • MANAGER, LAUNDRY OPERATIONS, PHILCO CORP.

PRODUCTION OF STEEL BLANKS for Philco electrical appliance stampings is a sizable undertaking in the Nashville, Tenn. plant of Avco Mfg. Corp., as several such appliances are produced in high volume. Nearly all steel for this purpose is purchased in coils that are stored adjacent to slitting and blanking equipment. Some blanks produced are of full coil width but, for some, the stock first is passed through a continuous slitter and is recoiled before blanking.

For slitting, coils are set on the expanding mandrel of an uncoiler and the stock is looped to the continuous slitter where the desired widths are produced. These widths then enter a recoiler to produce coils that are convenient for transfer to the blanking setup. Ribbons cut from the edges of the coil stock in the slitter are wound up on a side mandrel and subsequently sold as scrap.

Coil handling in the high bay, which serves both for storage and for slitting and blanking equipment, is done by an overhead crane. Coils to be cut into blanks are shifted onto the mandrel of an uncoiler, serving the flying shear. Stock loops to the shear and is advanced at whatever uniform rate may be set. As blanks are cut to length by the shear knives, they fall onto a belt that feeds the blanks to a roller leveler for flattening.

From the leveler, the blanks are discharged onto another horizontal belt that feeds them as rapidly as produced into adjustable bins where automatic stacking takes place. Stacks are built up to specified height on pallets that rest on a roller conveyor.



*View of the uncoiler and flying shear, where blanks are cut to length and run out onto a belt for advance to a leveler before being stacked.*

### Speeds to 200 feet per minute

Feed to and through the shear and leveler can be varied in speed up to a maximum of 200 fpm. Cuts are made as rapidly as required to produce blanks of the length specified for a given lot. Rates of blank production are too high for hand stacking. Mechanical stacking is as fast as required and is highly economical, as only one man, who tends both to blanking and to stacking, is needed. He sets the guide rolls of a unit, so that the blanks advancing on the belt leading from the leveler are diverted at the proper point and fall against a stop so as to form a uniform stack. When one stack builds up to required height, roller settings are changed so as to divert the blanks into the next bin. Often this change can be made without stopping the shear or its auxiliary equipment.

Controls are so arranged that the operator can stop the entire line at will, and he commonly stops it when stacks, still on the pallets, are to be moved from stacking points onto an extension of the roller conveyor for pickup by fork truck. Before this is done, bin partitions are removed or so set as to clear the stacks to be moved. When stacks are out of the bin area, the partitions are reset and the line is restarted.

Cutting of blanks to length in the shear is done by knives near the top of the unit that is pivoted at the bottom and is rocked back and forth in timed relation to the advancing stock from the uncoiler. This unit is so set that the speed of the knives, parallel to the stock, precisely equals that of the stock itself during the very short interval that each shearing cut is made; this, of course, is a requirement of any flying cutoff. As soon as the knives retract and clear the stock, they are rocked back immediately

*Control panel for blanking and slitting.*

to a given point and than start forward again until they reach the point where the next cut is made.

**Blanks from 12" to 192"**

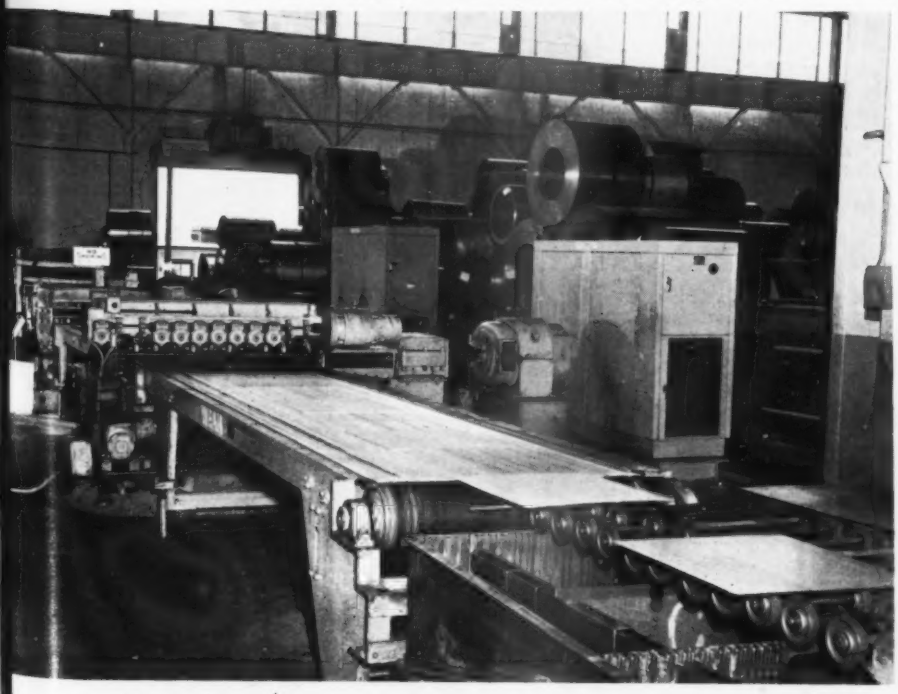
With this setup, it is possible to cut blanks to any length from a minimum of 12 inches to a maximum of 192 inches. As the stock can be advanced at any speed up to 200 fpm, blank production is very rapid. Moreover, length remains constant for a given setting. Stock of any thickness from 14-gage to 0.074-inch thickness is readily handled.

**Quick dry drawing compound**

Stacks of blanks that are to undergo draw operations are transferred to the loading point for the draw coating setup. There, each blank is hand loaded in spacing racks for passage through solutions in a row of tanks. In the first two tanks are cleaning solutions and, in the third, a water rinse. Two remaining tanks contain quick drying draw solutions in two different concentrations, one designed for vitreous enameling stock, and one for stock that will receive baking enamel or will require no applied finish.

Draw compound is applied hot and is of a type that dries very quickly after each rack load is lifted from the drip tank. Blanks then are removed from the racks and are restacked by hand on pallets that then are ready for transfer to draw presses. Application of compound that is dry long before blanks reach presses makes it unnecessary to apply any compound at the presses, and both the dies and the presses remain much cleaner than if wet compound were used. This also helps to keep the press shop clean. The dry compound is easily washed off before drawn parts receive an applied finish.

*Blanks cut to length in the flying shear, for use in Philco appliances, advance to the leveler, left center, and are fed to the belt shown. Continuing along the belt, blanks reach rollers, right, and are deflected into stacking bins below.*

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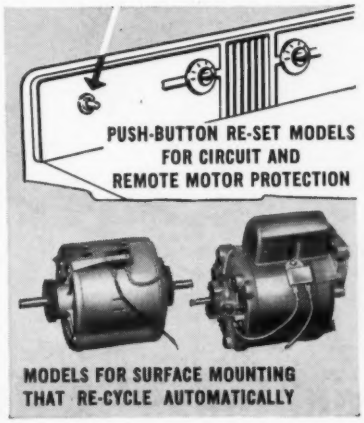
17 appliance makers say it really cuts service problems, **adds sales spark**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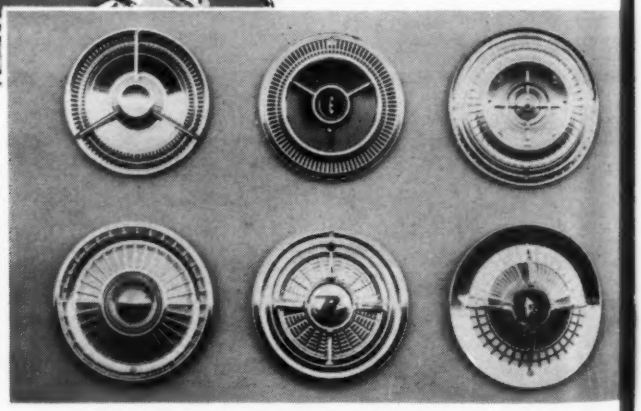
# Brightness is Not Enough

Wheel covers must be more than just bright. They must have strength, spring temper, durability and low unit cost in volume production.

Other materials may claim some of these characteristics, but only stainless steel actually possesses all of them — and has a performance record to prove it.

It is easy to **make cheaper wheel covers.** Just forget that customer complaints, lost goodwill and the inevitable replacement of parts eventually show up on the balance sheet.

In wheel covers there is no substitute for stainless steel's lasting brightness, strength and durability.



Can you name the cars represented by these stainless steel wheel covers? A postcard request will bring you the answers.

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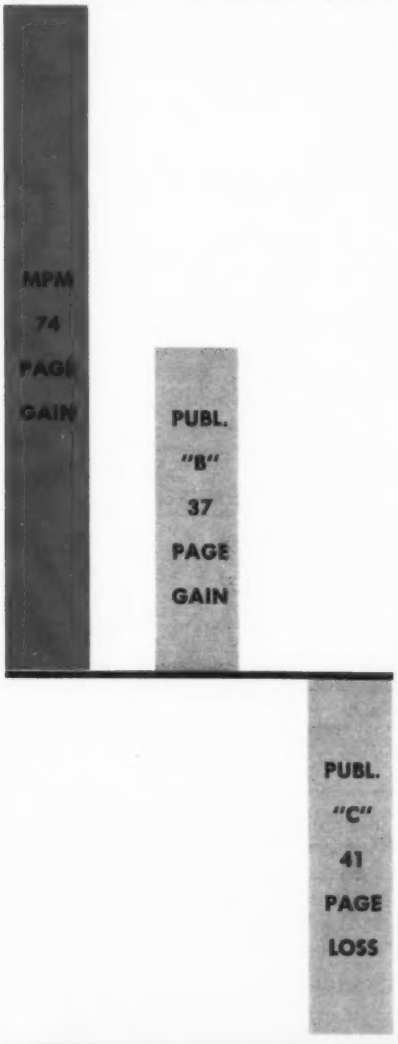
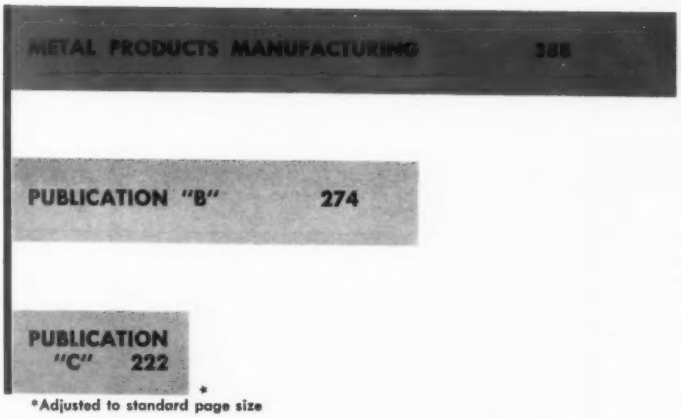
# to sell manufacturers of appliances note these facts about 3 publications serving the appliance OEM

**total page ADVERTISING gain or loss... 1st 9 months 1959...**




***total pages EDITORIAL . . . 1st 9 months 1959 . . .***




*Adjusted to standard page size

Since the inception of METAL PRODUCTS MANUFACTURING as a magazine in 1944, it has always carried a higher percentage of editorial content than other publications in the metals field. This is clearly demonstrated, in connection with publications serving the appliance industry, by the accompanying chart.

Quantity is one thing; quality is another. MPM spares no expense to prepare staff processing and engineering features procured in plants from coast to coast. Based on the best possible industry sources, these features are illustrated for the most part with exclusive MPM staff photos.

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| Rubber Cements | General purpose adhesion, as for adhering insulation or deadener pads. Especially good for fiberglass pads. | Excellent water resistance. Superior bonding properties. Service temp. range 0°F. to 175°F. |
| Elastic Compounds —Extrusions | Sealing seams on refrigerators, air conditioners, walk-ins, etc. Helps to keep out moisture or give an air seal where needed. | Tapes or round extrusions. Non-oxidizing. Excellent adhesion. Non-shrinking. Low heat and electrical conductivity. Will not affect most plastics, rubbers or lacquers. |
| Elastic Compounds —Grommets | Sealing areas where tubes and wire go through partitions, etc. | Available in grommets, special shapes. In black, green, aluminum-grey. High water resistance. Low thermal conductivity. Excellent adhesion. No shrinkage. |
| Cork Tapes | Wrapping and insulating cold refrigerant lines. | Excellent water resistance, adhesion, cohesion and insulation. Non-oxidizing, no unpleasant odor. Good flexibility. |
| Plastisols | Heat curing sealers for sealing outer cabinets of refrigerators and freezers, sealing spot-welded seams, providing smooth fillet on liners. | Little shrinkage. Good adhesion. Non-toxic. Low heat and electric conductivity. Non-oxidizing. Good resistance to water, acids, bases and oils. |
| Pumpable Mastic Sealers (White or Black) | Wherever a permanently soft mastic sealer is required, as for sealing breaker strips, fasteners, name plates. | Excellent water resistance, non-oxidizing, non-staining, non-corrosive. Little or no slump or flow at elevated temps., will not get brittle below freezing. Will not soften enamel, craze or etch most plastics. Non-shrinking. |
| Permagums (Brown or White) | Sealing seams of all kinds in refrigerating equipment. | In bulk or extrusions. Non-hardening. Mild odor, non-contaminating. Water resistant, good adhesion. Easily handled and molded. High cohesive strength. Will not swell most rubbers. Flexible at low temperatures. |
| Plastic Sealer Tapes | Sealing seams, especially under extreme temperature variations. | Excellent water resistance. Non-staining, non-bleeding, non-corrosive. Extremely tacky, do not cold flow at elevated temperatures. High elongation and cohesion, including many release-type surfaces as glass, polyethylene, etc. |
| Wat-R-Bar | Sealing in areas subject to frequent freeze-thaw cycling. | Permanently plastic, in bulk or extrusions. Excellent resistance to deterioration caused by freeze-thaw cycling. Good adhesion, water-resistance. Non-shrinking. Won't stain or soften lacquer, swell most rubbers or plastics. Will not flow at 400°F. |
| Presst-O-Cel | Insulating refrigerant lines. Controls condensation, sweating, and provides vapor barrier. | Closed-cell sponge tubing. Excellent water and air-tightness. Resists oil, acid, alkali. High insulation factor, non-inflammable. Lightweight. Long life. Resistant to rodents, vermin and fungi. |
| Thermal Mastics | For implementing heat transfer from tubing to liner on cold wall evaporators. | Non-volatile, non-shrinking. Non-contaminating. Long shelf life. Good adhesion, excellent water resistance. Applied by trowel, caulk or flow gun, spray or splatter gun. |

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*PARKER-KALON offers three new, improved thread-cutting screws for every application in every material*

## 1 New, Improved P-K Type F*

. . . hardened thread-cutting screws developed for use in friable, granular or brittle material. The pilot, with its five tapping flutes, cuts a machine screw thread as the screw is turned in. The Type F is ideal for making fastenings to ferrous and non-ferrous castings, bronze or brass forgings, heavy gage sheet metals, structural steels, plastics and resin-impregnated plywood.

## 2 "Pentap"... the new, Improved P-K Type B-F*

(formerly F-Z) combining the five thread-cutting flutes of the Type F screw with the coarse-pitch, widely-spaced threads of the P-K Type B. The thread-cutting "Pentap" Type B-F distributes cutting pressure evenly, lets chips drop to the bottom of the hole, and prevents cracking of material. It is designed for making fastenings to comparatively thin sections and bosses in friable and brittle plastics.

## 3 P-K® Type L†

. . . is a completely new and improved thread-cutting screw developed by Parker-Kalon especially for use in Nylon. The Type L functions as a combination thread-cutting and thread-forming screw in that it cuts a small amount of the Nylon to allow the full diameter threads to form. Type L offers a particular advantage in Nylon assemblies which must be disassembled for service, because *the P-K Type L can be removed and replaced without stripping or galling.*

**The five cutting flutes on the new, improved P-K Type "F" and "BF" reduce pressure development by 80 percent!** The completely formed threads on these screws have sharper cutting edges, and 5 deep flutes that are of continuous depth. These features make for better clearance of the accumulated material and assure minimum stresses in driving, and avoid the possibility of stripping or galling.

**FOR SEMS** . . . and Neoprene or Nylon washer STAPS® in thread-cutting and thread-forming tapping screws, or machine screws in any kind of pre-assembled fastener-washer combination, P-K can supply them, too!

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*Patent Pending †U. S. Patent 2,350,346

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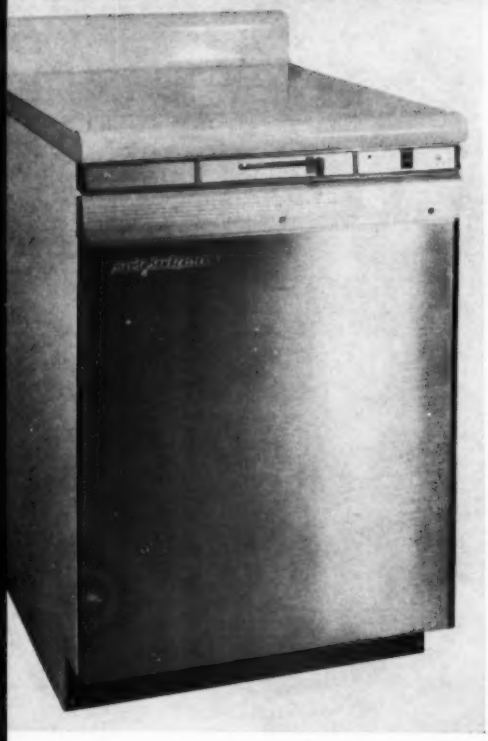


WASHING AND DRYING TIME 16 MINUTES
CYCLE 1 30 SECONDS — PRE-WASH SPRAY
CYCLE 2 7 MINUTES — FILL TANK (DETERGENT INJECTED) AND ULTRASONIC CLEANING (IMMERSED)
CYCLE 3 1 MINUTE — DRAIN
CYCLE 4 30 SECONDS — AFTER-WASH HOT WATER RINSE
CYCLE 5 7 MINUTES — FORCED HOT AIR DRYING ▼

# The ultrasonic dishwasher makes its debut

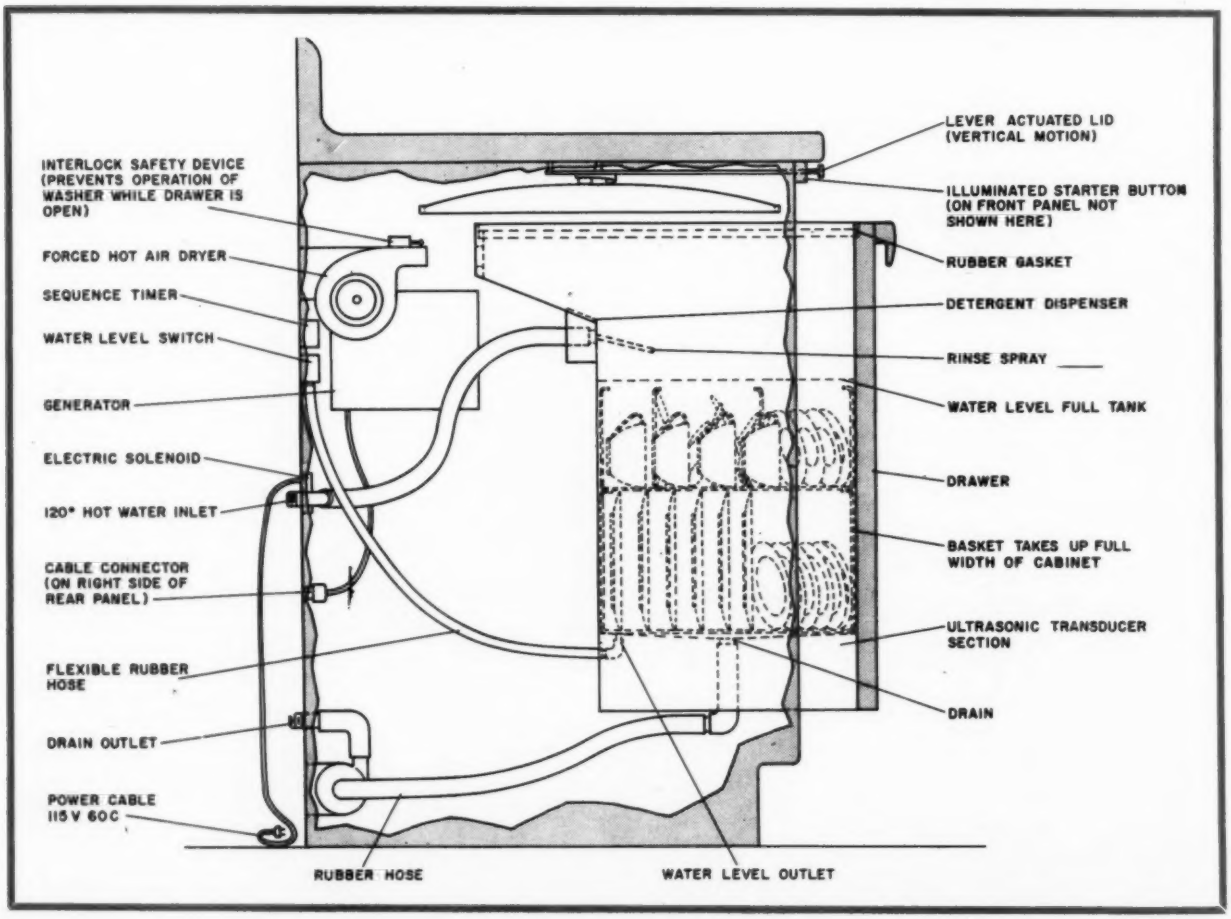
## successful industry cleaning principle applied to cut dishwashing time almost in half

TO THE AVERAGE CONSUMER, "Vanguard" is a term most associated with the Cape Canaveral, Fla. missile launching site. However, this may change . . . and very shortly, too.

Industry men who have an eye on the ever-growing ultrasonics field know that the term "Vanguard" has been designated as the name of the first household ultrasonic dishwasher. Narda Ultrasonics Corp., Westbury, Long Island, introduced the appliance at the Institute of Radio Engineers show in New York in March of this year and the voiced opinions on the design and workability of the product was more than gratifying . . . so much so that Narda expects to be producing the dishwasher for household use late this year.

Ultrasonic washers are not a novelty. In addition, the newer lines of ultrasonic equipment being produced include units for non-destructive testing, thickness gauging, flaw detection, and similar inspection purposes; chemical processing; de-aerating of boiler feed water and other "gas problem" liquids; die and mold shaking and other high frequency vibration; underwater signaling and navigation; remote control of TV sets, garage doors, reactors, and other processing equipment; and depth gauging.

Narda, itself, has been producing a small unit for industrial small parts cleaning and other models, including a



two-stage, push-button controlled vapor degreaser. Commercial and military sales reached $25,000,000 in 1958 for the industry. Sales for this year are expected to be double that figure. However, since this marks the introduction of the initial household dishwasher, its development has caused industry leaders to believe there will be a $150,000,000 annual market for ultrasonic equipment within the next five years.

**Uses conventional detergent**

The "Vanguard" is a mobile, roll-around unit which can be plugged into any 110 volt electric outlet and hooked up to the normal household plumbing system. It is designed to operate with conventional dishwashing detergents and tap water.

The dishwasher is completely automatic and is equipped with a motor-driven pump and food grinder. It has an automatic sequence-timer for controlled cycling of the power rinse, ultrasonic wash, final wash, and hot air drying phases.

Total washing and drying time for the dishwasher is 16 minutes, compared to the usual washing and drying cycle of 25-30 minutes for conventional dishwashers. A pre-wash spray rinse takes 30 seconds. Then, the tank is filled with water, the detergent injected, and the dishes cleaned ultrasonically. This phase takes only seven minutes. After the water is drained (one minute), the dishes go through a 30-second hot water rinse. The final phase is a seven minute forced hot air dry.

**Transducers key to cleaning**

Key to the cleaning operation is the transducer section located at the bottom of the tank. The transducers serve to convert electrical energy delivered by the generator, located at the rear of the dishwasher, into high frequency sound waves at 40,000 cycles per second. (The range of sound waves audible to humans stops at about 20,000 cycles per second.) These high frequency waves alternately compress and decompress the water in the tank, causing many tiny vacuum bubbles to form and collapse with tremendous force. This cavitation action eliminates all traces of dirt from the item being washed.

According to Paul M. Platzman, executive president of Narda, "with ultrasonic dishwashing there will no longer be any need for hand scrubbing of dishes to remove stubbornly-clinging food particles. Fried egg, hardened sugar, coffee residues in the bottom of the cup, and even lipstick traces will slide off in a few seconds."


GENERAL INDUSTRIES

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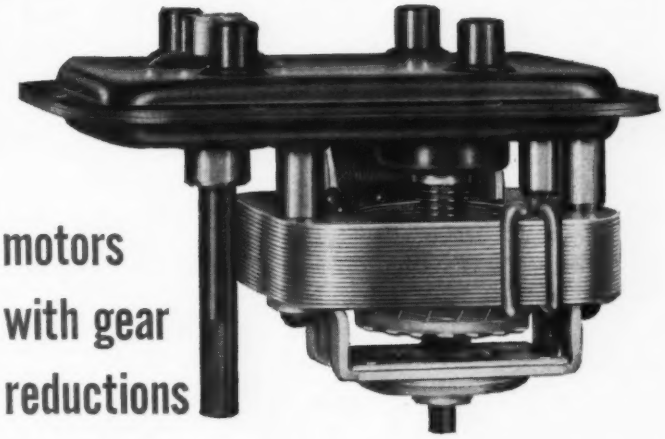


motors with gear reductions

for low-speed high-torque applications

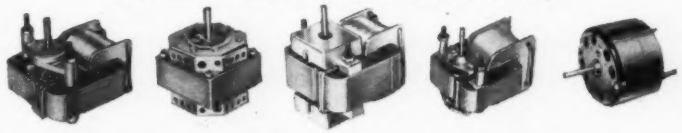
Designed for low-speed, high-torque applications, GI Gear Motors are widely used in TV Remote Control Units, Vending Machines, Timing Devices, etc. Molded nylon gears in a dirt-sealed housing insure extremely quiet running plus rugged dependability. Rotor disengages, if required, when gear train is de-energized. For reliability, plus extra silent service, specify GI Gear Motors. Precision-made, with mass-production economy.

GENERAL SPECIFICATIONS

| | MODEL 205 | | MODEL 308 | |
|---|---|---|---|---|
| | Intermittent | Continuous | Intermittent | Continuous |
| SPEED | 13 RPM | 13 RPM | 13 RPM | 13 RPM |
| TORQUE | 150 in./oz. | 100 in./oz. | 150 in./oz. | 90 in./oz. |
| AMPS, No Load | 2.5 | 1.25 | 1.2 | 0.6 |
| WATTS, No Load | 26 | 13 | 24 | 12 |
| REVERSIBLE | No | No | Yes | Yes |
| CONDENSER | None | None | 60 MFD | 60 MFD |

*Above data based on 24 volts — Intermittent Duty 3 minutes on and 5 off. Both models can also be supplied for 115 volts — 60 cycles.*

MOTORS TO MEET EVERY REQUIREMENT



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THE GENERAL INDUSTRIES CO.

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*For a single tank cleaner to do many jobs*

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Here is a remarkable alkaline material with powerful cleaning and chelating action. It conquers a wide variety of soils. In a tank of Oakite RUSTRIPPER, you can remove scale and rust with complete safety. It strips tough paints and phosphate undercoatings with ease. It cleans off metallic smuts, light shop soils, discolorations.

Look at its performance in shop service: "Aircraft parts freed of scale with boiling soak, instead of sand blasting" . . . "oil, welding flux, rust removed in job plating" . . . "soaked steel wrenches give brighter plate" . . . "removes all rust, scale carbonized oil from diesel liners prior to plating" . . . "displays amazing solution life even though worked very hard" . . . "eliminates pickling and precleaning for barrel plated screws" . . . "does to bolts in 3 minutes what took pickling 40 minutes". *And that's just a sample.*

Write for Bulletin 9651. Better yet, ask the Oakite man. Oakite Products, Inc., 26 Rector Street, New York 6, N. Y.

*it PAYS to ask Oakite*

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50 *1909-1959 years' leadership in industrial cleaning*

SCIENCE

Photograph by famous underwater hunter-photographer Jim Thorne

# DEEP SEA HUNTER FAILS TO FLAKE INLAND TI-CO®

More than a match for ferocious 700-pound hammerhead sharks, this compressed-air powered gun fires underwater spears with terrific force. Again and again its high-speed missiles pierced this Inland TI-CO galvanized sheet, yet at the edges around the holes there wasn't a trace of flaking of the zinc coating.

Yes, you can perforate TI-CO sheets. You can subject them to deep-drawing, spin-drawing, punching, crimping, Pittsburgh lock-seaming, in fact the toughest fabricating processes—*but you won't flake TI-CO!*

No wonder TI-CO galvanized sheets are top-choice with manufacturers in such a wide variety of new applications and products. TI-CO is manufactured with dry, oiled or chemically treated surfaces to meet your production needs. It comes in sheets or coils in gages 8 to 30 inclusive and in widths as great as 60 inches. Specifications, application and performance data, complete information, is all contained in a free TI-CO booklet we'll be glad to send at your request. For your galvanized sheet or coils requirements, consult your Inland representative.

Close-up inspection shows no flaking of TI-CO's zinc coating

INLAND

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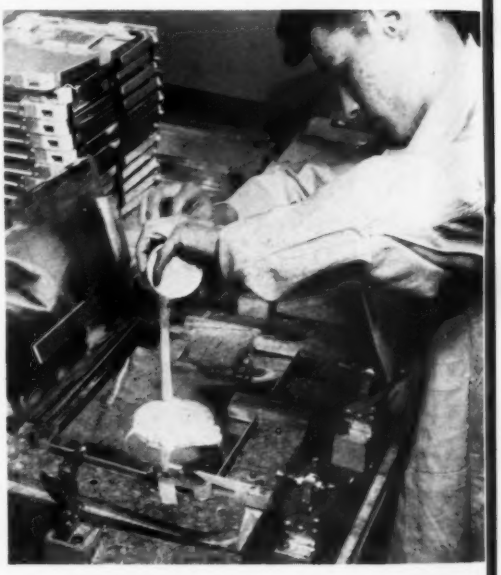
*Clinton A. Nelson (left) and Roy A. Dunlop, partners in MechniArts, discuss cocktail-type tray. Visible in foreground are model seats for the Boeing 707 Jetliner, seat on left being used on tourist flights, and seat at right for first class accommodation.*

*(Right) — Workman in foreground is placing prepared wooden blocks in corners of tray. Aluminum strips are then put in place and held with masking tape.*

*(Center) — First step in the foaming process begins here. After bottom assembly has been put together, workman pours 130 grams of polyurethane and isocyanate resins onto a bottom sheet of flexible aluminum. Top assembly, standing at left, is later put in place and top of form positioned and clamped. Forms are vented to allow runoff of excess, and to prevent occlusion of heat and gases generated during foaming.*



*(Below) — Top form is now locked in place. As foaming action continues, top layer is beginning to exude through escape holes. This excess, when set, will be scraped off. Foam, when set and cured, provides a completely voidless fill and structure of semi-rigid consistency.*

AIRLINE TRAYS FOR THE 60'S

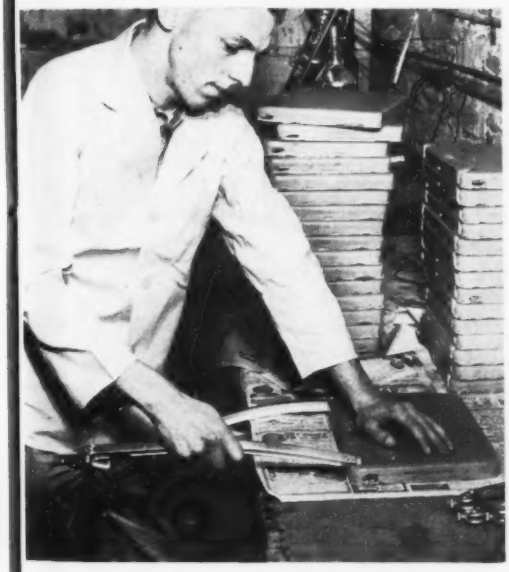
# Metal-foam-metal sandwich finds another use

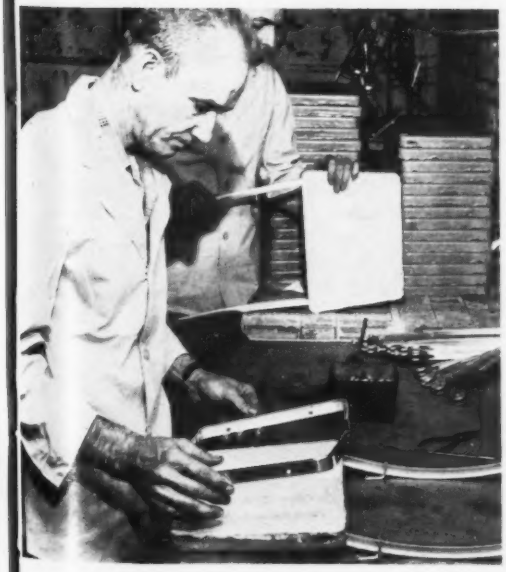
A METAL-FOAM-METAL TRAY is making a contribution to the comfort of jetliner passengers coursing the airlanes of the world. Custom-built by MechniArts Associates, Kansas City, Mo., the fold-down trays are used for serving meals and beverages, reading, and for letter writing and other paper work.

The trays are standard equipment on American Airlines' Boeing 707s and Lockheed Electras as well as on Trans World Airlines' 707s and Super and Super-G Constellations. In addition, trays are found on Northwest Orient, Continental, Japanese Airlines, Cubana, and Delta planes.

Key ingredient in the tray is a polyurethane plastic foam made of a combination of two viscous resins. The foam is used as a sandwich material between two layers of flexible aluminum sheet. The semi-rigid foam has high bonding characteristics and, because of this quality, high structural values.

Introduction of the foam has allowed the development of a new design, incorporating the trays as integral equipment in the seat. The trays are built to fold into the back of the seats. To blend with cabin decor, the bottom, or exposed side when folded, is covered with decorator material over felt padding. Two aluminum legs, fixed to the outer frame, sus-





tain the tray when it is swung down for use. The aluminum tray tops are made of various plastic laminates.

**Production in ten steps**

A finished tray is produced by MechniArts in ten steps:

1. Aluminum sheeting is stamped out and the edges turned.
2. Prepared wooden blocks are placed in the corners and the aluminum strips placed and held with masking tape.
3. A glass-holder mold and dummy packing are positioned and the plastic top and bottom panels glued to flat top and bottom metal.
4. The assembly is then placed in a flat form and fastened top and bottom.
5. At this point, workmen pour 130 grams of the polyurethane foam into the assembly.
6. With foaming underway, workmen quickly place the tray's top piece, whose outside edges are bent down to fit into the outer diameter of the under section. The top part of the form is placed and locked. The forms used are vented by means of bored holes to allow excess foam to run off and to insure a complete fill.
7. After being put aside to set for 30 minutes, forms are removed and the trays placed under weights for 12 to 24 hours to prevent deformation during curing.
8. They are then removed and felt padding and vinyl covering are applied to the underside.
9. The legs are fixed to the side panels.
10. Final aluminum edging is screwed in place and the trays are ready for shipment.

In use, the trays are retained in the back of passenger seats by a small catch. To operate, the passenger trips the catch and the tray settles into place just above lap height. Trays in first class accommodations measure 10 x17 inches; those for tourist flights 10 x 14 inches.

*(Top) — Thirty minutes after pouring, finished tray is removed from form, excess foam is cleaned away, and assembly is placed under weights to cure.*

*(Center) — Felt and vinyl covering have been placed on backs of stack of trays shown. Workman is attaching and bolting on the aluminum legs, which will be fixed to seat backs of airliners.*

*(Left) — Final step in the assembly is application of decorator fabrics to the bottom panel, which is exposed when folded out of use. With the fabric in place, workman installs strip aluminum edging with self-threading screws. Tray is now ready for installation.*

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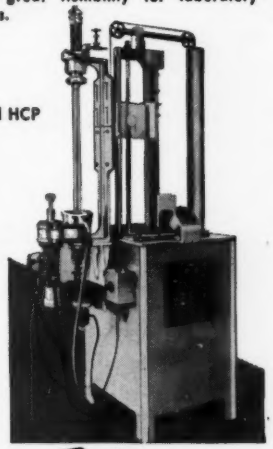
**FLOATING ZONE UNIT FOR METAL REFINING AND CRYSTAL GROWING**

A new floating zone fixture for the production of ultra-high purity metals and semi-conductor materials. Purification or crystal growing is achieved by traversing a narrow molten zone along the length of the process bar while it is being supported vertically in vacumm or inert gas. Designed primarily for production purposes, Model HCP also provides great flexibility for laboratory studies.

Model HCP



*Features*

- A smooth, positive mechanical drive system with continuously variable up, down and rotational speeds, all independently controlled.
- An arrangement to rapidly center the process bar within a straight walled quartz tube supported between gas-tight, water-cooled end plates. Placement of the quartz tube is rather simple and adapters can be used to accomodate larger diameter tubes for larger process bars.
- Continuous water cooling for the outside of the quartz tube during operation.
- Assembly and dis-assembly of this system including removal of the completed process bar is simple and rapid.

Electronic Tube Generators from 1 kw to 100 kw.
Spark Gap Converters from 2 kw to 30 kw.

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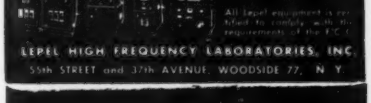


LEPEL HIGH FREQUENCY LABORATORIES, INC.
55th STREET and 37th AVENUE, WOODSIDE 77, N. Y.

MPM EXCLUSIVE FEATURE

# Ceramic coatings fight . . .

*Porcelain enamels fortified with special heat resistant materials are used in jet aircraft to protect the underlying metal from intense heat and corrosive fumes. In many cases, the use of ceramic coatings has more than doubled the life of afterburners and combustion chambers in jet engines.*

*by W. J. Plankenhorn,* CHICAGO VITREOUS CORP.

The prevention of corrosion has presented a challenge since man first learned to produce articles from ferrous metals. The severity of the conditions to which metals are subjected in our modern technology have increased the complexity of the problem until, today, corrosion control is a specialized field of science in which porcelain enamels and ceramic coatings continue to play an increasingly-important part.

During World War II, the critical shortages of metals and alloys of known corrosion-resistant characteristics provided an incentive to adopt porcelain enamels for strictly functional purposes. These functional coatings were desired to protect metal components from highly-corrosive atmospheres at relatively-high temperatures.

Based on porcelain enameling techniques and experience, finishes were developed for application to iron and a variety of alloys to improve their performance and service life under corrosive conditions. Many of these finishes contained conventional porcelain enamel frits milled with refractory oxides or other non-glassy materials. In some instances, special frits were developed.

*Ceramic coatings also have application in combustion chambers for heaters, a good spot for corrosion prevention.*

The relatively-large percentages of non-glassy materials combined with the special frits oftentimes resulted in a dull mat finish differing from the smooth glossy texture usually associated with porcelain enamels. This difference in appearance eventually suggested the term, Ceramic Coating, to identify functional porcelain enamels. *This special group of functional finishes can be broadly defined as inorganic, essentially non-metallic materials fused to metal components.* They are generally glass-hard, relatively-thin coatings for cast or formed metal parts of varied composition, size, and shape.

The ceramic coatings that have been used most extensively are those that incorporate a frit or a combination of frits as the major constituent with important percentages of mill added refractory oxides. The frit or frits selected have a controlling influence on the work-ability of the enamel and upon the physical and chemical properties of the fired coating. The mill added refractory oxides are most effective in providing the thermal stability necessary for high temperature durability.

With the almost unlimited number of frit compositions and the many variations in mill additions, it is possible to obtain a wide variety of coatings with diverse properties. However, in many instances, certain properties must be compromised to enhance the one particular property most desired. This limits the possibility of obtaining a universal or all-purpose coating and is the reason why a special coating must generally be engineered for each specific application.

Although ceramic coatings are primarily considered as corrosion protective finishes, they possess engineering properties which provide additional advantages that may not be obtainable with other materials. These properties may be divided into several groups.

### Appearance and physical properties

The appearance can be varied over a considerable range. Various colors are obtainable. Black coatings with a mat texture have been used to approach black body conditions in enclosed heated containers. White opaque coatings have been produced which display 90 per cent diffuse reflectance relative to magnesium oxide. Others are capable of suppress-radiation in selected wave lengths and at high temperatures. Fluorescent and phosphorescent finishes are also available.

The apparent density of fired coatings

THE AUTHOR

may range from 2.0 to as high as 6.0 depending upon formulation. Hardness can vary from 7 to 3 on the Moh scale, equivalent to quartz and calcite, respectively. They can have a modulus of elasticity of up to 10,000,000 psi. They do not have yield values and are considered to be brittle. However, they will generally conform to the shape of deformed metal providing the metal is not stressed beyond its elastic limit. The rigidity processed by a thick coating can improve the effective strength of the metal to which it is attached, while showing considerable flexibility when thinly applied. The compressive strength is several times greater than the tensile strength and has been reported to be as great as 35,000 psi.

Ceramic coatings have increased the effective endurance limit and fatigue strength of ingot iron and 18-8 type stainless steels when tested at room temperature. They have also been shown to increase the stress rupture strength of specimens fabricated from 18-8 stainless steel type 321 when tested at both 1400 and 1600° F.

*Water heater tanks are shown here leaving a continuous enameling furnace prior to inspection. Ceramic lining of these tanks has proved a boon to the industry.*

### Thermal, electrical and chemical properties

Thermal properties distinguish ceramic coatings from other types of finishes. Since they are inorganic and have been reacted at relatively-high temperatures, they are stable up to temperatures approaching that at which the glassy phase begins to soften. Protection at service temperatures up to 2200° F. are possible, depending upon the coating formulation and the metal to which it is applied.

Coatings can effectively protect metals from heat corrosion, intergranular oxidation, nitriding, carburization and decarburization in the temperature ranges through which they are stable. They can inhibit these processes at even higher temperatures, thereby extending service life even under adverse conditions.

The cubical coefficient of thermal expansion may range from 150 x $10^{-7}$ to 450 x $10^{-7}$ $cm^3/cm^3$ per degree Centigrade. This property influences the ability of the coating to fit the metal base and the resistance to thermal shock. Many coatings can withstand repeated quenching from temperatures of 1200 to 1400° F. into cold water without failure. They can reduce temperature gradients in components subjected to differential heating and cooling or provide an insulating effect when properly designed and applied as relative thick coatings.

Ceramic coatings generally have good chemical resistance at moderate temperatures. Alkali solutions have little effect at temperatures below 120° F. Coatings can be formulated to resist attack by boiling solutions of alkalies, including sodium hydroxide, and all organic and inorganic acids, except hydrofluoric. *Some of the silica-free glasses which have recently been studied may provide the basis for coatings to withstand attack by hydrofluoric acid.*

Coatings with exceptional resistance to attack by lead bromide vapors and vanadium are available. Both of these chemicals are extremely corrosive to metals. In tests, coated specimens of 18-8 type stainless steel were not affected by lead bromide vapors while the unprotected metal was severely corroded. In testing the resistance to vanadium attack, specimens of coated 310 stainless

**Table**
**Electrical Properties of a Typical Ceramic Coating**

| | Frequency (cycles per second) | | | | | |
|---|---|---|---|---|---|---|
| | $10^2$ | $10^3$ | $10^4$ | $10^5$ | $10^6$ | $10^7$ |
| Dielectric Constant | 9.34 | 7.92 | 6.76 | 5.98 | 5.54 | 5.53 |
| Dissipation Factor (per cent) | 11.75 | 11.10 | 9.27 | 6.48 | 3.33 | 1.76 |

Resistivity (ohm cm.) 2.41 x $10^{12}$
Dielectric Strength (peak volts per mil) 400

These data were obtained at room temperature on coatings applied at a thickness of 2 mils to 321 stainless steel. They are average values for six tests.

steel did not show evidence of corrosive attack when cross sectioned through the test area and viewed with a metallographic microscope. Bare plates similarly tested and sectioned showed loss of cross sectional thickness and intergranular attack.

Ceramic coatings and porcelain enamels are generally classed as nonconductors. They are oftentimes used to provide electrical insulation for metal components. However, electrical conductance can be achieved by unique formulations and also at temperatures approaching the softening point of the glassy phase of the coating. Dielectric values of from 100 to 1000 volts per mil of coating thickness have been measured. Resistivity measurements on a variety of coatings have been recorded ranging from 1 to 50 x $10^{13}$ ohm centimeter at room temperature.

Protection is also afforded against electro-chemical reactions. Most underground corrosion is attributed to this cause. In a September, 1958 Technical News Bulletin of the National Bureau of Standards, it was stated that "Coatings of vitreous or porcelain enamel revealed no signs of deterioration after 14 years of exposure." This was in contrast to the experience with many of the other protective finishes tested.

### Typical applications

The glass linings applied to hot water heater tanks furnish examples of some of the more chemically-resistant coating compositions which have been developed. Coatings of the same general type are employed for silos, chemical processing equipment, industrial smoke stacks, domestic flue liners, and other products where the metal must be protected primarily from chemical attack.

**TYPICAL APPLICATIONS FOR CERAMIC COATINGS**

Aircraft components fabricated from titanium and its alloys.

Burner grates.

Cast iron thermocouple protection tubes.
Chemical equipment.
Coal chutes.
Compressor blades.
Continuous furnace shoe plates.

Engine cowling.
Engine components subject to vanadium attack.
Exhaust pipes.
Exhaust stacks.
Exhaust systems.

Flue liners.
Flux pots.
Fuel injection tubes and engine parts subject to lead bromide attack.
Fuel injection tubes and jet engine parts.
Furnace parts.

Grates.

Heat exchangers.
Heat treating tools.
Hot water heater tanks.

Jet engine combustion and exhaust parts.
Jet engine combustion chamber inner liners.
Jet engine tail cones, tail pipes, and afterburner sections.

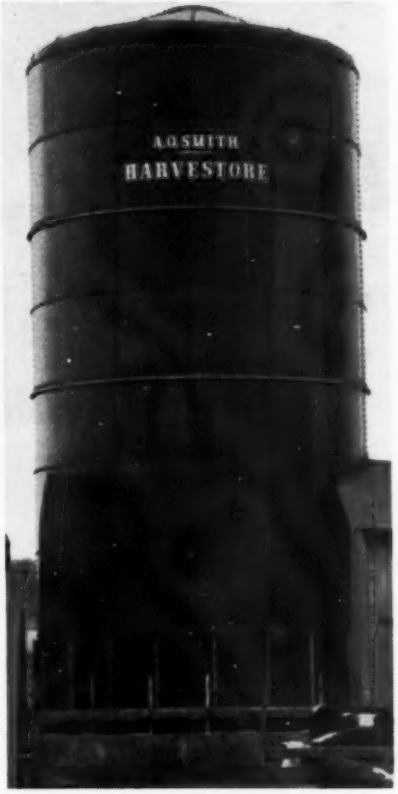
Space heaters.
Space heater units.

Tote boxes.
Transition liners.

Coatings have been used to extend the service life of flux pots. In one installation, coated 35-15 nickel chrome cast alloy pots remained operative after 250 hours where unprotected pots failed after 7 to 10 hours service. The effective service life of thermocouple and chlorinating tubes used in aluminum melting has been increased several times by the application of suitable coatings.

A manufacturer in the Chicago area has been coating the radiant tubes for heat treating furnaces for a number of years. Even though these tubes are fabricated from a high nickel alloy, the coating increases the operational life by several times in serving as a barrier against carbon diffusion and intergranular corrosion. A number of manufacturers of domestic furnaces and space heaters are using ceramic coatings to

*to Page 84* →




*Ceramic coated steel has made "vertical farming" a reality. This storage unit is both effective and eye-appealing. The coatings may be had in a variety of colors.*

**PROCESSING INFORMATION FOR REPRESENTATIVE CERAMIC COATINGS**

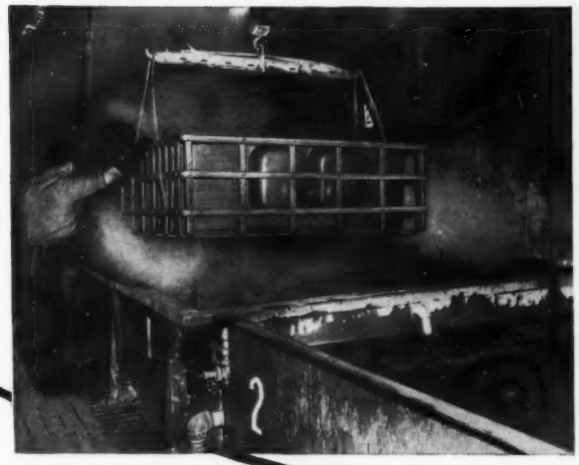
| Appearance | Base Metal to be Used* | Application Weight Gm./sq. ft. | Optimum Fired Thickness (mils) | Firing ** Temp. °F. | Firing ** Time Min. | Service Temp. °F. |
|---|---|---|---|---|---|---|
| Gray, mat | Low carbon and Low alloy steels | 15 | 2.0 | 1600 | 5 | 1400 |
| Black, mat | | 15 | 2.0 | 1600 | 4 | 1400 |
| Blue, semi-glossy | | 18 | 3.0 | 1650 | 6 | 1450 |
| Black, mat | | 20 | 3.5 | 1650 | 3½ | 1100 |
| Blue, glossy | | 22 | 4.0 | 1550 | 4½ | 1300 |
| Black, semi-mat | | 22 | 4.0 | 1500 | 4 | 1100 |
| Blue, semi-mat | | 22 | 4.0 | 1500 | 4½ | 1200 |
| Blue, glossy | Timken Alloy 17-22A(S) and Low carbon steels | 15 | 2.0 | 1750 | 4 | 1000 |
| Gray, semi-glossy | | 15 | 2.0 | 1100 | 10 | 900 to 1000 |
| Gray, semi-mat | | 15 | 2.0 | 1740*** | 20 | 1400 |
| Green, glossy | Inconel and Stainless Steels of the 300 and 400 Series | 15 | 2.0 | 1850 | 10 | 1800 |
| Green, glossy | | 15 | 2.0 | 1800 | 10 | 1800 |
| White, mat | | 20 | 3.0 | 1700 | 6 | 1600 |
| Green, semi-glossy | | 15 | 2.0 | 1900 | 15 | 1900 to 2100 |
| Brown, semi-glossy | | 15 | 2.0 | 1800 | 15 | 1800 |
| Black, semi-glossy | | 15 | 2.0 | 1900 | 20 | 1900 |
| White, semi-mat | | 15 | 2.0 | 2000 | 10 | 1800 |
| Metallic | | 30 | 1.5 | 2000 | 10 | 2000 |
| Blue | Cast Iron Titanium | 15 | 2.0 | 1540**** | 25 | 1600 |
| Blue, glossy | | 15 | 2.0 | 1800 | 6 | 1800 |

* Sandblasting recommended as method for metal preparation. Pickling may be satisfactorily employed in some instances.
** Firing temperatures and times given for 18 – 20 ga. stock, except as noted.
*** Timken Alloy 17-22(A) drawn for 6 hr. at 1165°F. after coating is fired in controlled atmosphere.
**** Cast Iron – fired in controlled atmosphere.

# MAC CHEM 1-2 CLEANING PROCESS for ENAMELING

## for High Quality PORCELAIN ENAMELING

### IT'S A HIGH SPEED CLEANING PROCESS THAT CLEANS SO IT STAYS CLEAN



In enameling, there's nothing so costly and disheartening as rejects. If you are faced with this difficulty—due to unclean metal parts—Mac Chem 1-2 Enameling-Cleaning Process can be of an infinite help.

While we do not claim that Macco Cleaner and Cleaning Process will entirely eliminate all rejects, we do maintain they will reduce them to minimum.

**1** **Mac Clean No. 20 is a Heavy Duty Cleaner specifically designed to remove all special enameling drawing compounds, etc. It is a fast, easy-to-use, economical cleaner — non-toxic, non-corrosive, and non-injurious to metals.**

**2** **Mac Chem No. 30 is a Second Step, Light Duty Cleaner which removes all residue from the cleaner baths, leaving the metal so chemically clean that it stays clean and readily accepts acid pickle and nickel.**

**FOR QUICK RESULTS**

*Write or phone Macco today and have a Macco engineer make a demonstration in your plant. No obligation, of course.*

This 2-Stage Metal Cleaning System is serving some of the country's largest porcelain enameling plants. Can be used with equal effectiveness in both automatic and batch type equipment.

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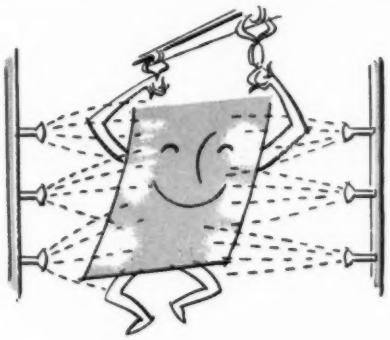
## CLEANING AND SURFACE-PREPARATION EQUIPMENT

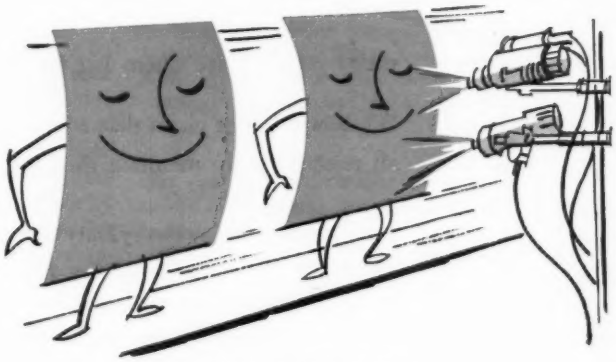
DeVilbiss offers both standard and custom-designed power washers to meet your exact operating problem. We work closely with your engineers to match machines to cleaning processes, surface treatments, solution temperatures, and quantities of chemicals required.



POWER SPRAY CLEANING AND TREATING

## COATING EQUIPMENT

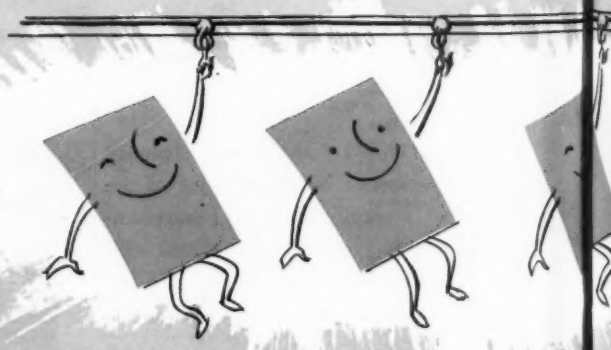
Whether you need a single manual spray gun or an entire coating system complete with enclosures, spray booths and air-replacement systems—DeVilbiss can handle your requirements for any type application. Design, manufacture, and installation are a single responsibility. You get greater value in the initial purchase, and peak performance with high efficiency is assured by the combination of matched equipment and fully integrated engineering.



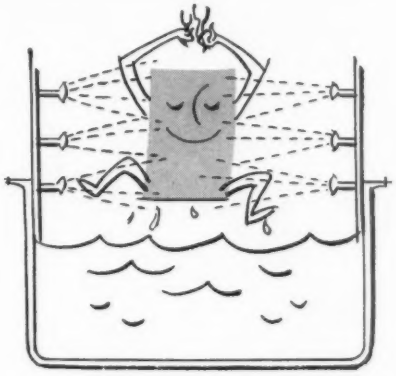
AUTOMATIC SPRAY

## INDUSTRIAL OVENS

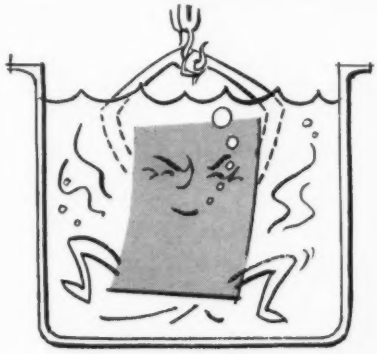
Each DeVilbiss heating or drying oven is designed specifically for the job. They're available in all types—compartment, belt, floor, multi-pass vertical, bottom-entry, A-type, vertical-tower, and roof—using steam, gas, oil, or electricity. All incorporate features for minimum maintenance and high utilization of heat; comply with code, underwriters' requirements.



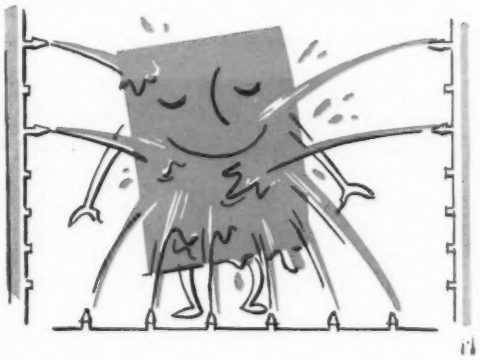
# for all finishing equipment!



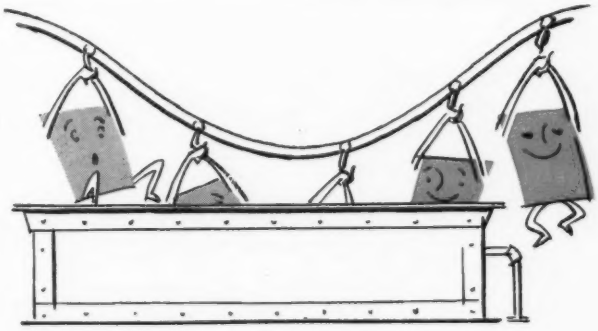
COMBINATION IMMERSION
AND POWER SPRAY



AGITATED IMMERSION



FLOW COATING



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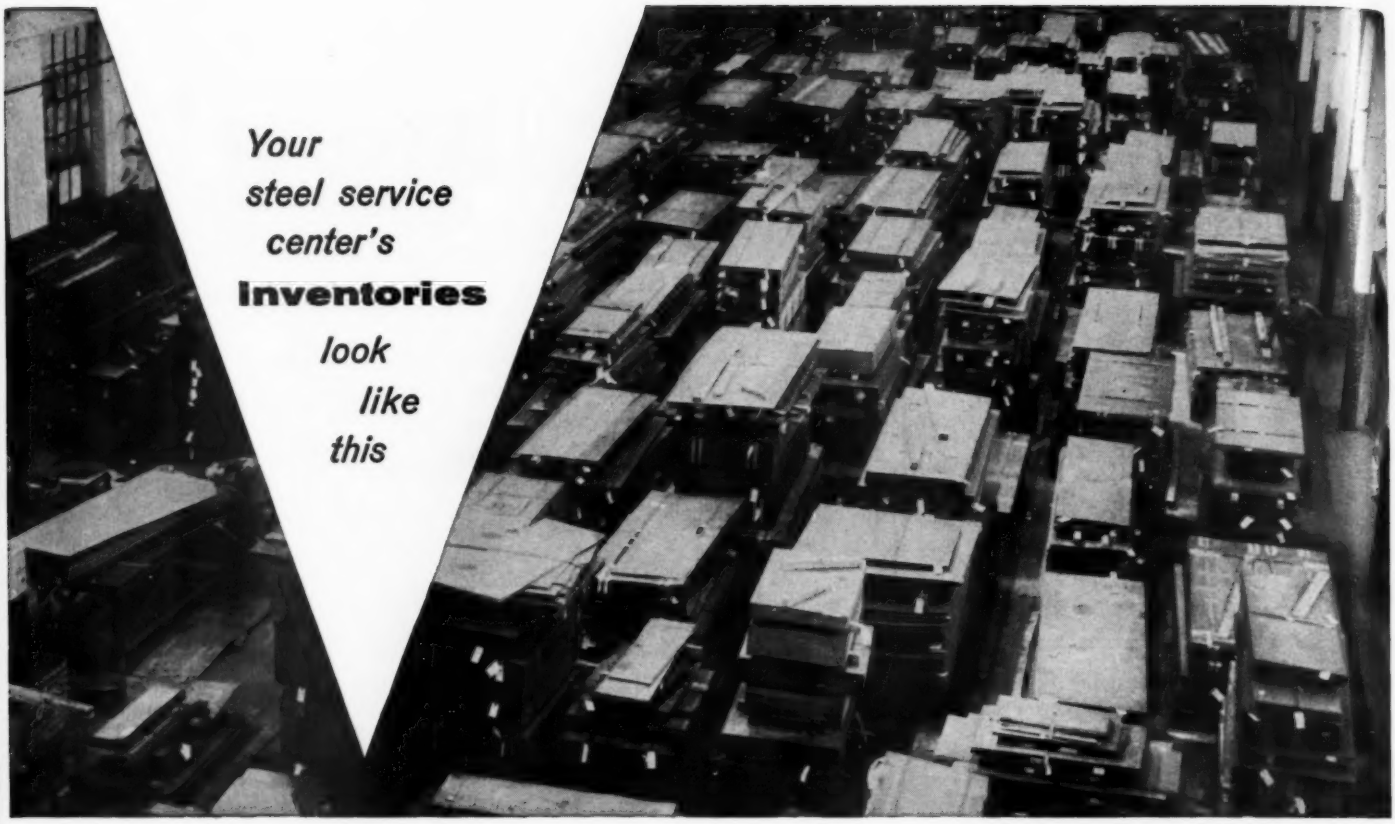


*Photos courtesy of The Universal Steel Company*

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## . . . ask Temco

In the Temco fabricating department literally **hundreds** of different die sets . . . including those for stamping out discs for "Coca-Cola" signs . . . are in use regularly. There are five "big" presses, shown below, ranging from 400-ton down to 75-ton capacity and numerous small presses in constant operation at Temco. Versatility is the first requirement for equipment and a **most reliable drawing compound** is a necessity. That's why Temco has been a regular user of **Kerns' "Dry-Film"® Drawing Compound** for many years.

**ONLY KERNS OFFERS SO MUCH!**

**ECONOMY**—cost per stamping is reduced because only 1 pound of "Dry-Film"® compound is required where 5 pounds of conventional wet type compound would be required.

**DRAWABILITY**—permits severe draws. In many cases deep draw quality stock can be replaced by commercial quality stock.

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**CLEANABILITY**—coated parts will clean with utmost ease even after extended periods of storage. No need to clean before welding.

**COMPLETE SOLUBILITY**—once dissolved (being a true solution) will not separate or settle out.

**WIDE CHOICE OF APPLICATION METHODS**—can be applied manually or with automatic equipment by spray, roller coater, flow coater or dip tank.

***Try it . . . prove it to yourself by using Kerns'*** **MEMO BILLING TRIAL BASIS.** Kerns will supply material for production test . . . no formal invoice rendered unless completely approved in production.

***Write for Technical Data Sheet "Dry-Film"®***

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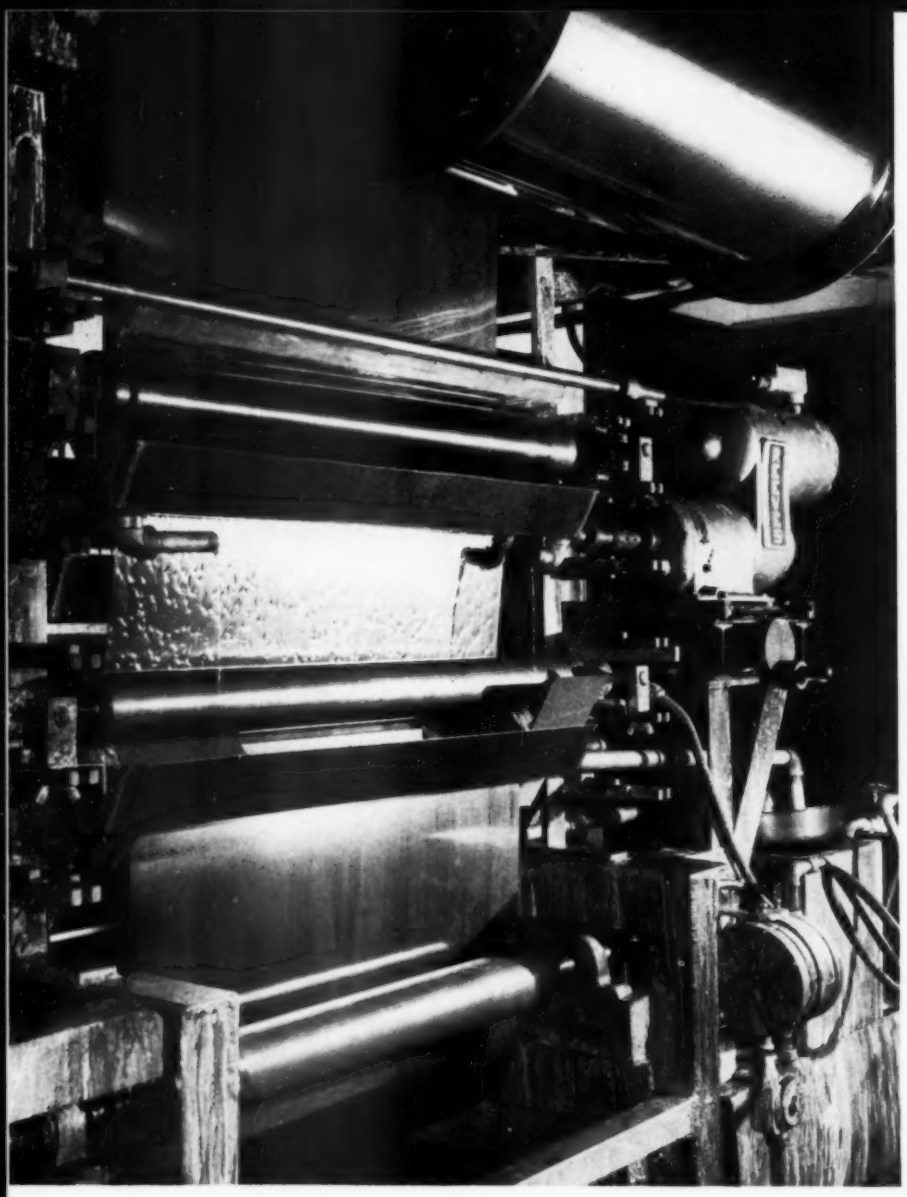


*A section under oven number one, where the reverse roller coater applicators apply coatings of various types, film thicknesses, and color. Dual installation is used to coat both surfaces simultaneously. Specially-designed rollers at the top control wet film thicknesses to .1 mil.*

# Coating coil steel in 48-inch width

AN MPM STAFF FEATURE

AS A PART OF A FIELD STUDY in preparation for a continuation of a series of feature articles on modern methods of coating metal sheet and strip (coil) stock, MPM editors visited the plant of Enamelstrip Corporation at Allentown, Pennsylvania. This plant proved to be a source for multiple stories of interest to the metal fabricator, finisher, and the producer of finished metal products.

The plant equipment for the coating of coil stock, prior to fabrication, is a story in itself. A complete unit, now in operation, can apply up to five different types of coatings to a 32-inch strip (coil) metal, at rates up to 150 feet per minute. A new unit, which will be in production as this article comes from the presses, will turn out 48-inch coated material (coated both sides). This new machine will have an initial capacity of 2,500 tons per month. This, added to 1,500 tons on existing equipment, will give a total plant capacity of 4,000 tons. It is expected that this will be stepped up appreciably, as it is anticipated that the new equipment may eventually be operated as fast as 300 feet per minute, which would represent 2,500 tons per month on *one shift* only.

A second story lies in the unique application equipment engineered to control coating application weights to within a fraction of one mil. This application equipment, termed a "reverse roller coater applicator," can be equipped with a variety of especially-designed rollers for the control of wet film thickness. Rollers may be used in different combinations for each side of the metal for variation in thicknesses or application of different coatings.

A third story is represented by the successful application of catalytic combustion (a controlled oxidation catalyst system), which gives the company a 99-per cent pure exhaust from the baking ovens, thus completely elminating the passing of fumes to the outside atmosphere, while at the same time recuperating heat from the solvents, with a resultant material fuel savings.

The versatility of the processing at Enamelstrip is worthy of editorial treatment, for included in their production are: (1) a wide variety of organic coatings to metal, (2) vinyl to metal laminates, (3) plastisol coatings, and (4) *Miracoil* — a polyester, non-oriented plastic film.

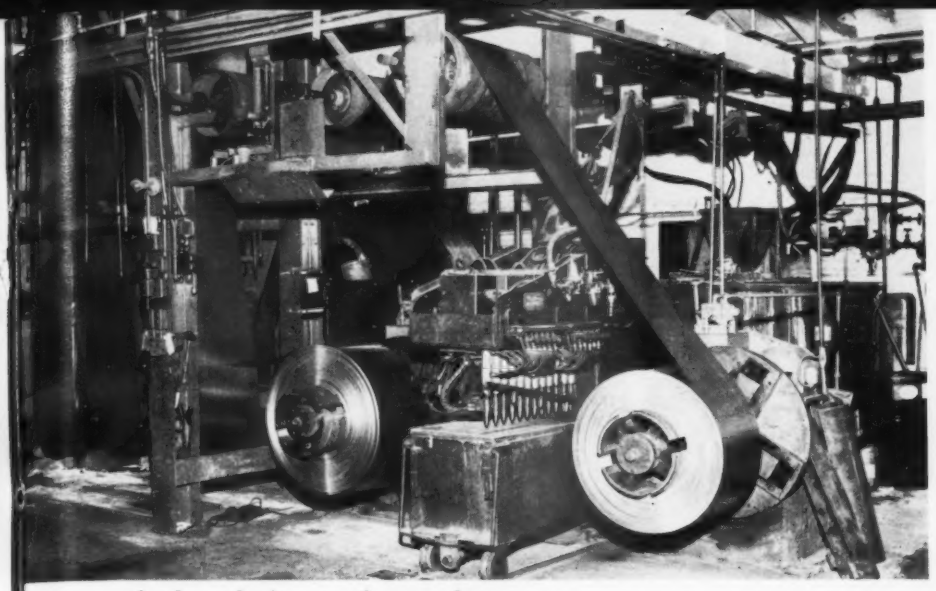
The highlight of our story is the processing of this clear plastic (decorated as required) coating of approximately one mil thickness. On the new equipment, this special plastic material will be laminated from a 48-inch coil to a 48-inch coil of steel, at a rate of approximately 150 feet per minute.

The 48-inch line is being activated primarily so that *Miracoil* can be supplied to the appliance field as a decorative-protective wraparound material for refrigerators, and other appliance cabinets, and for use as pre-decorated wall paneling by the building industry.

Arthur Uhleen says that *Miracoil* is a natural for home appliances manufacturing because, in addition to potential production economies, it can be produced in the whitest of white which will not fade, yellow, or otherwise deteriorate in appearance. For pre-decorated wall paneling in office buildings, motels, and homes, *Miracoil* is available in more than 500 wood grain patterns.

### Big steel behind project

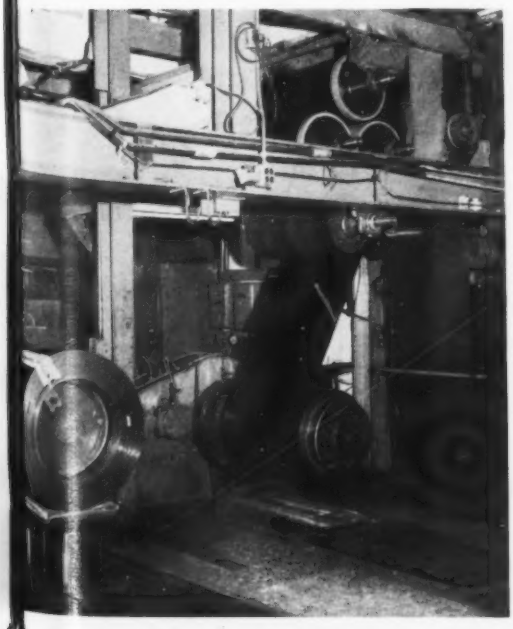
The prime mover in this enterprising operation is Arthur Uhleen, founder and executive vice president of Enamelstrip. Uhleen foresees the possibility of coating metal with organic and plastic materials at rates up to 1,500 feet per minute. As MPM editors saw the struc-



*As the end of one coil nears the entrance to the coating equipment, a puller bridle pulls the end of a new coil through a stationary welder, and welds the end of the depleted coil to the end of the new coil. An accumulator (left) is provided to allow time for the welding operation without slowdown of the equipment line.*

tures rising for 70 foot high ovens for the new 48-inch coil lines, it seemed that almost any "dream" for the future might be possible.

National Steel Corporation, now the country's fifth largest steel producer, put its money behind its belief in the future of coated coil as a pre-fabrication material of the future when it purchased Enamelstrip Corporation and proceeded with plans for plant expansion. It is the purpose of this MPM feature to highlight the production equipment and processes in this interesting plant.



*(Left) — Coil steel coming out of 40-ton uncoiling system and then entering the tension bridle unit. From there it goes on to re-wind mandrels at the end of the line.*

### Start with a ten-ton coil

Here is the procedure of a coil as it goes through the complete cleaning and coating machine. The steel is first checked for weight, gauge, hardness, and width. At the start of the production line, the coil is deposited from a lift truck onto the coil ramp. This ramp feeds either one of two tandem uncoilers, so that there is no break in the production. As the end of one coil nears the start of the production line, the starting end of a new coil is joined with it in a stationary welder. From the uncoiler, the 48-inch strip enters the first section of the metal preparation system.

### Metal preparation

A five-tank, power spray, metal preparation system is employed. Tank number one is an alkali cleaner; tank number two is a hot water rinse; tank number three metal preparation material (the metal preparation material varies, depending upon the product being run). For example, on the major runs with cold rolled steel, an iron phosphate coating is used. In cases where hot dipped galvanized stock or electrogalvanized steel are run, this calls for zinc phosphate coating. Tank number four is a room temperature water rinse. Tank five is a chromic acid rinse.

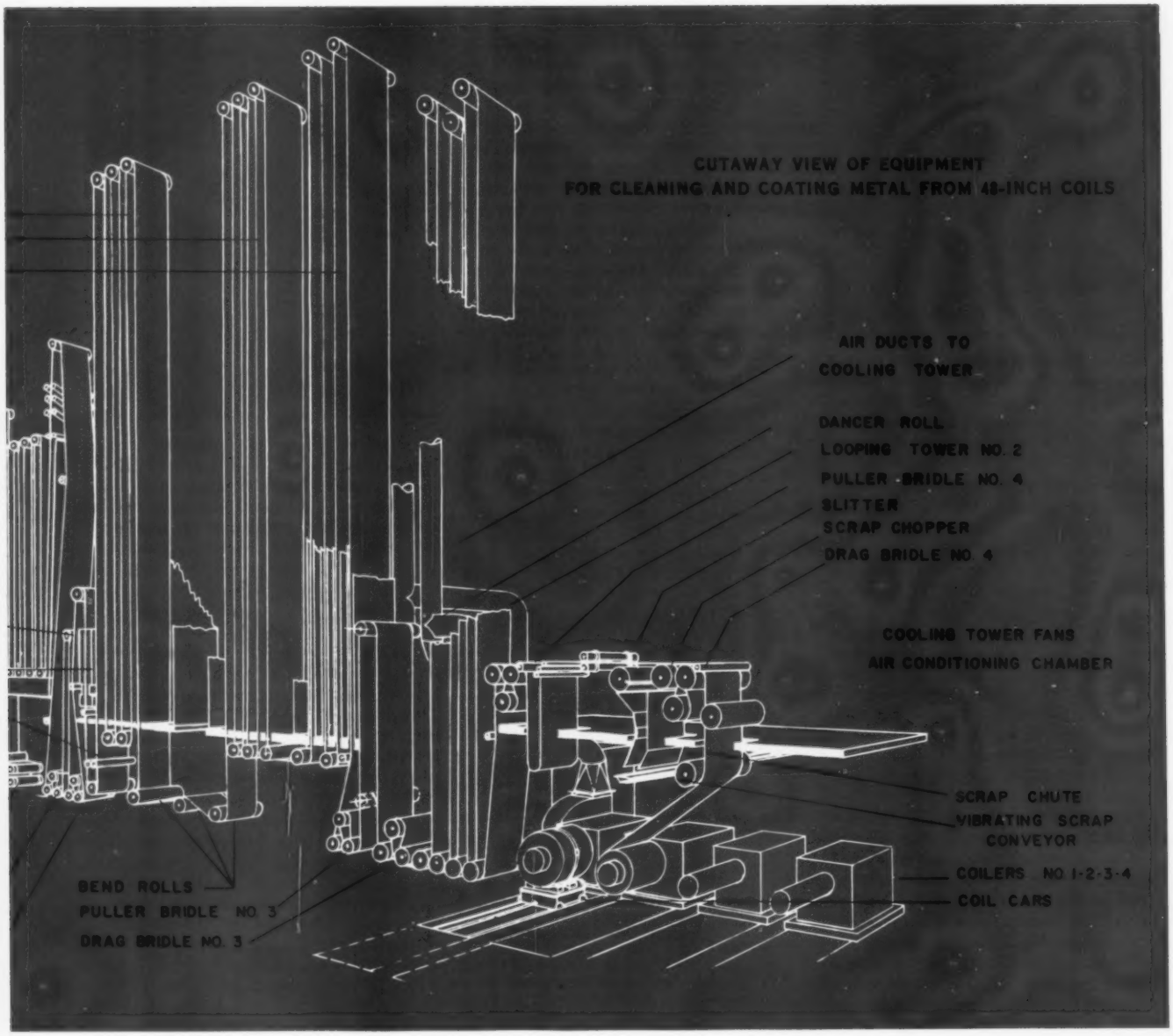
The equipment in the enclosed spray unit includes stainless steel feed jet nozzles operating at 30-lbs. pressure, and squeegee rolls which are located immediately following each tank. Solution heating is done by coil plate-type immersion heaters, with steam as a heat source. Thousand gallon storage tanks are provided for each solution, and the solutions are then pumped direct from

these tanks to the individual tank sections of the metal preparation machine. These 1,000-gallon storage tanks are provided with dividers, so that the return pumps push the solution in at one side of the divider, and there is ample time for settling and filtering before the solutions go to the exit side of the tank for pumping back into the system.

### Controlling the solutions

Iron phosphate is controlled at 150° F., zinc phosphate at 180° F., and chromic acid at 160° F. Recording-controller pyrometers are used to control the temperatures of the solutions, actuating a solenoid valve to control the temperature source.

Solutions are titrated every 15 minutes, because of the volume of material going through the system, and so that corrections can be made as often as four




times an hour. Detailed records are kept of this procedure.

The company feels there is a definite advantage in the vertical-type cleaning equipment, for in addition to the spray as customarily used in metal preparation equipment, there is a definite flow action of the liquids as the sheets proceed vertically. The company says that this action has proved that it gives greater uniformity in the iron phosphate coatings on both sides of the strip.

From the metal preparation section, the coil proceeds to a vertical drier, held at a temperature of approximately 160° F. The function of this drier is to completely remove all traces of moisture from the preceding operations.

The next section of the equipment consists of a vertical pre-heating system to prepare the metal for coating. This is also held at 160° F. (metal temperature). This temperature may be varied, dependent upon the type of coating which follows.

### Pre-heating — a key operation

It has been determined that the temperature of this pre-heating has a definite value in that it improves the metal-coating bond and has good effect on gloss and texture. This obviously decreases the time and temperature curve for baking, because the coating is, in part, cured from the "inside out."

At this point it should be explained that all liquid coatings are pre-heated in paint heaters on the line. These heaters are located within one foot of the liquid-metal contact, and the heaters are set to establish a temperature of 160° F. (coating temperature) as it reaches the metal. As can be seen, this makes it possible to coat the coil with materials under good viscosity control and with the use of less solvent or volatile material. The company feels very definitely that, with the assistance of the heat from the metal (from the underside of the coating), the dissipation of solvents is accomplished to a greater extent before a skin is formed over the surface.

### Handling organic coatings

A great variety of organic coatings are in stock at the Enamelstrip plant, including alkyds, vinyls, epoxies, phenolics, oleoresins, and water base finishes.

Paint is stored in drums and, before the material is used, the drums are rotated for two or three hours (depending on percentage of solids). The material is then transferred to a homogenizer for complete mixing. All paint is mixed by weight, and all ingredients weighed to control viscosity.

*Sylvania Slimline Model 23T13 in metal cabinet comes in Mahogany or Blonde Oak grained finish, typical of the many products fabricated from Miracoil.*

### Special coating applicators

Immediately below vertical oven number one are two coating applicators which make it possible to apply a coating to both sides of the strip simultaneously. In some instances, an identical coating may be applied to both sides, or there may be coatings of two different types or color, or there may be coatings of two different thicknesses. (In the case of *Miracoil*, a special, pigmented adhesive coating is applied to the side which will form the face of the strip, and any specified type of decorative or protective coating may be applied to the reverse side.)

These applicators, of special Enamelstrip design, are unique and have a great deal to do with the close control of application weights of coatings. Included in the factors which are important to this control are the variable drive pumps, which control the rate of flow of material; the applicators, which deposit the film of liquid onto the metal; the spacing from the applicator to the leveling roller, used to control the wet film thickness; and the special leveling rollers, which are varied in design for different types of coatings and for different film weights. These rolls are also driven by variable-speed drives to afford flexibility. Another point — these rolls can be run with the flow of the metal or counter-flow, and at various rpm. These variables, built into the special equipment, make it possible to control the wet application thickness to a point of .1-mil. Coatings actually applied are in the nature of .1-mil to 3-mils, but in actual production procedure, the normal coating thickness for organic finishes is about .6 to .7 mil.

### Refrigerated cooling tower

Normally, only one oven would be required, but for specialized work such as plastisols, where two coats are applied, the second coat is applied between oven number one and oven number two.

Following oven number two, the strip passes into a 60-foot cooling tower which is served by an 80-ton compressor (refrigeration). The strip is cooled to about 5° below room temperature.

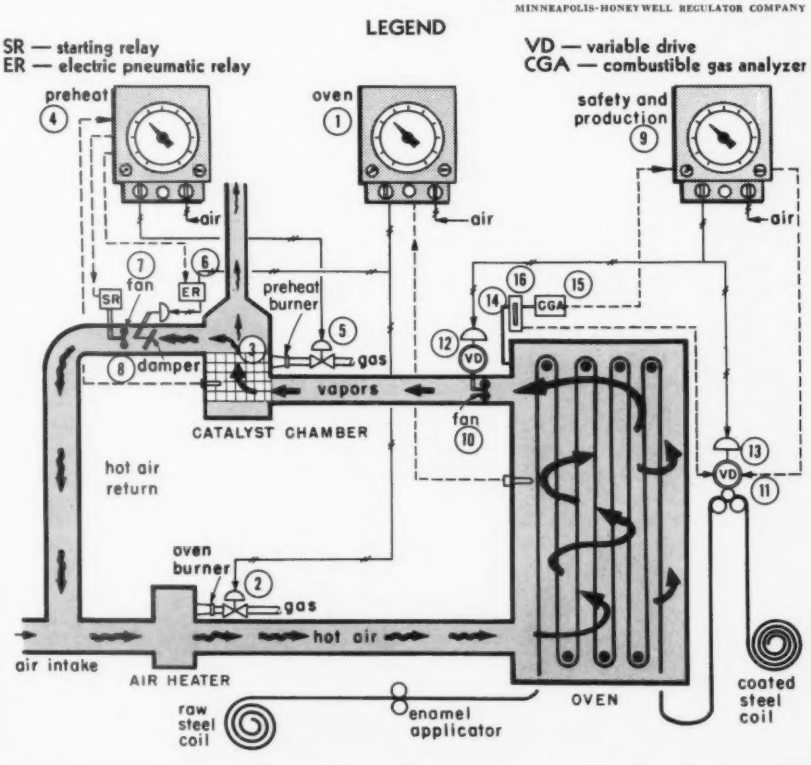
From the cooling tower, the strip passes to the slitting and/or side trimming operation, and then to the recoilers. Some of the pre-finished coil stock requires no slitting or side trimming and, therefore, bypasses the operations to the re-coilers.

### Miracoil, with plastic surface

If we now return to the "reverse roller coater applicators," we can pick up our story on *Miracoil*. At the point of application, one applicator applies the combination color-adhesive coat. This will later form the bonding base for the lamination of the transparent plastic surface coating. The process depends to a large degree, both for film thickness, degree of gloss, and entirely, as regards color, on the combined ad-

*A small section of the "finished" storage at Enamelstrip. These coated coils, many of them finished to specifications, are ready for shipment to contract customers. All rail shipments of coils are in loads of 80,000 pounds in dunnage free cars.*

SCHEMATIC DRAWING COURTESY INDUSTRIAL DIVISION, MINNEAPOLIS-HONEYWELL REGULATOR COMPANY




### OPERATING SEQUENCE FOR CONTROL SYSTEM

**When oven is first started, oven temperature controller (1) opens air heater fuel valve (2) to warm oven up to desired temperature. As long as catalyst bed (3) temperature is below 1,200° F., preheat controller (4) keeps preheat burner fuel valve (5) open and electric-pneumatic relay (6) closed.**

**As soon as oven vapors reach catalyst bed, temperature begins to climb. Above 1,200° F., preheat controller closes valve (5), starts exhaust fan (7), and opens relay (6). This returns hot air to oven, increasing oven temperature. Controller (1) therefore closes valve (2). As oven temperature continues to rise, controller (1) closes damper (8) to prevent overheating the oven.**

**Safety and production controller (9) keeps concentration of vapors in oven at safe level. When concentration rises slightly, controller speeds up exhaust fan (10) and slows down main drive (11) through pneumatic speed controllers (12) (13). Should concentration get dangerously high, or the sample line (14) to combustible gas analyzer (15) become clogged, controller (9) and rotameter (16) immediately shut down main drive.**

hesive-undercoat which is applied at this point. It is basically an adhesive coating, but is built up as a pigmented coating for color.

On the reverse side of the coil or strip, a protective or decorative coating is applied as may be required for the end product to be fabricated.

For the production of *Miracoil*, oven number one and oven number two actually become a composite, dual oven. The material flows through this "dual oven" at a curing temperature of 300-600° F., depending on the film, the gauge of the metal, and the speed of operation. As the material comes from oven number two, the coating on the reverse side of the coil has been cured. However, the adhesive-type coat on the face of the coil is still slightly plastic.

### Cold "quench" for bonding

On the last down-run of the coil in oven number two, the strip feeds to a pressure roll which, in turn, is served by a 48-inch roll of clear plastic surfacing material, fed from immediately below the oven.

The surfacing material is a non-oriented, polyester-type film. This may be used as a clear, transparent film, or it may be a printed film with any type of decoration that can be photographed. It will be evident to the reader that the final finish depends for its color upon the pigmented adhesive coat applied earlier.

As soon as this laminator-bonded material leaves the pressure rolls, (the pressure runs approximately 60-lbs. per square inch) it passes immediately into the cooling section. Here the material, at a temperature of approximately 350° F., is "quenched" to a temperature just above freezing. This air quench is considered extremely important to the proper bonding and setting of the plastic surface.

The non-oriented polyester plastic film is backed up by an especially-processed white paper. This paper serves the combined purpose of a carrier for the very thin coating of plastic, a protection in handling, and as a protection in drawing operations. It should be made clear that all decoration is on what we might term the back side of the plastic film, which actually is sandwiched between the plastic film and the surface coating applied by Enamelstrip.

### Material quality control

Samples are sheared from each finished coil of material for the following tests: (1) A one-inch wide strip is scored through the surface of the metal at the center point, and then subjected to a 30-per cent elongation test. The material must flow with the metal and not peel back at the point of scoring. (2) The Olsen cup test. In this test, the metal is deformed to the point of fracture and must show no delamination. (3) A 12″ by 12″ panel is bent on a standard press brake at 180°. The material is then examined under a microscope for cracks or fractures. (4) A sample of material which has been passed through the Olsen cup test is submerged in boiling water for one hour. It must not show any signs of delamination or surface defects. (For this test, a sample is taken from one of five coils of production ware.) (5) A sample which has gone through the Olsen cup test and the boiling test is tossed into "deep freeze" temperature (sub-zero) to check for thermal shock.

### Catalytic combustion towers

The Enamelstrip plant was first started in operation in 1942. In 1953-'54, the company had a very serious air pollution problem. As one executive expressed it, "When we were having lunch at the club on the hill, we could readily tell what type of finish was being run in the plant."

Today, each of the production lines is equipped with a "catalytic combustion or oxidation tower," which consists of an electronically-controlled oxidation catalyst system that turns the solvent fumes into clean, hot gas. Tests indicate that the oven exhaust to the outside air is 99 per cent pure; thus the pollution problem was ended with the installation of this equipment.

A typical installation consists of a number of brick-sized (5½ by 3⅛ by 3 inch) catalytic units, stacked in a catalyst chamber. Each unit is made up of a number of slender, streamlined (to minimize turbulence) porcelain rods, supported between two porcelain end plates. A tough film of catalytic agent on these rods — a platinum and alumina alloy — triggers combustion of exhaust gas contaminants at temperatures far below normal ignition temperatures.

By no means a secondary return from the oxidation catalyst system is the heat generated in the combustion tower and returned to the baking ovens. When an oven is to be started, the catalyst bed is first pre-heated to 600° F. As the oven is first lighted, a meter may show an input of 1,500 cubic feet of gas per hour. Within one minute after combustion is started, the catalyst unit is up to 1,200° F. heat, and the gas usage in the oven will show a drop to about 500 cubic feet per hour. Records show that fuel costs for existing ovens were reduced as much as 75 per cent.

Another interesting sidelight is the fact that the firm's insurance rates are in the lowest possible category. These rates dropped from $1.25 per thousand to 6¢ per thousand as a result of complete control of the operating system.

There is complete automatic instrumentation for the control of all operations in the system. One instrument continuously records concentrations of combustible gases in the ovens and automatically adjusts production rates to keep output at its peak safe value.

Present uses for *Miracoil* run from attractive wood-grained television and radio cabinets to truck bodies. It is recommended for use with existing tooling in fabricating plants, and may be subjected to the same forming operations as uncoated steel.

With this coordinated setup for the production of pre-coated strip (coil) steel, for fabrication into end products, National Steel's Enamelstrip Corporation expects to be producing 4,000 tons of finished coated material monthly, in the not-too-distant future.

**EDITORIAL NOTE: Arthur E. Uhleen, executive vice president and one of the founders of Enamelstrip Corp., was born in Gothenburg, Sweden. He came to the U. S. at the age of 18 and has remained in the States, in school and in business, since that date. Uhleen majored in engineering studies, and began his engineering career in the textile industry in 1927. As an executive with American Armament Corp. in Allentown in 1941, he became intensely interested in the art of metal decorating, and joined forces with Robert A. Liebel to form Enamelstrip Corp. He is a past director of the National Association of Metal Decorators.**

*Arthur Uhleen holds a small sheet of polyester, non-oriented plastic film which forms surface coating for Miracoil.*

**RESULTS FROM TESTS ON MIRACOIL**

HUMIDITY — 1,000 hours at 100° F., 97 per cent relative humidity.

Results: excellent bond and no sign of blistering.

ABRASION — 1,500 cycles with CS-17F wheel and 1,000 gm. wt. (Taber Abrasor).

Results: no evidence of failure.

WATER IMMERSION — 115 hours at 77° F.

Results: no evidence of failure.

STAIN TESTS — Miracoil was unaffected by the following: Ten per cent hydrochloric acid; ten per cent sodium hydroxide; 70 per cent alchohol; mustard; vinegar; port wine; lemon juice; gasoline; carbon tetrachloride; 10 per cent citric acid; household soap; household detergent; cooking oil; household ammonia; coffee; wax crayon; shoe polish; moth and fly spray; urine; beet juice; dye; ink; iodine; and phenol.

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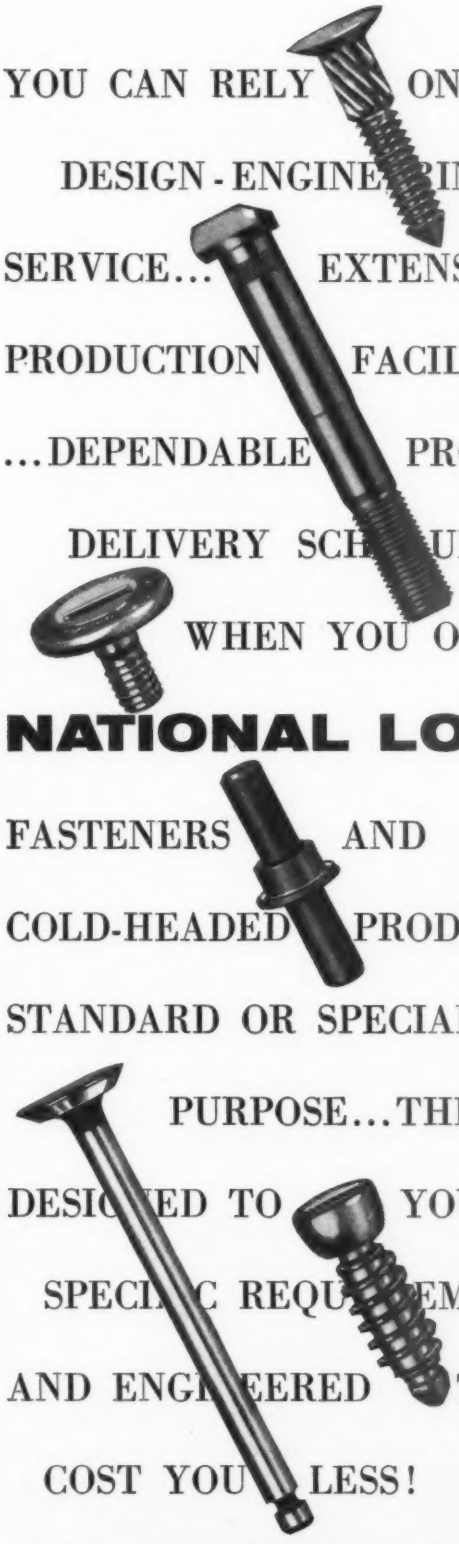
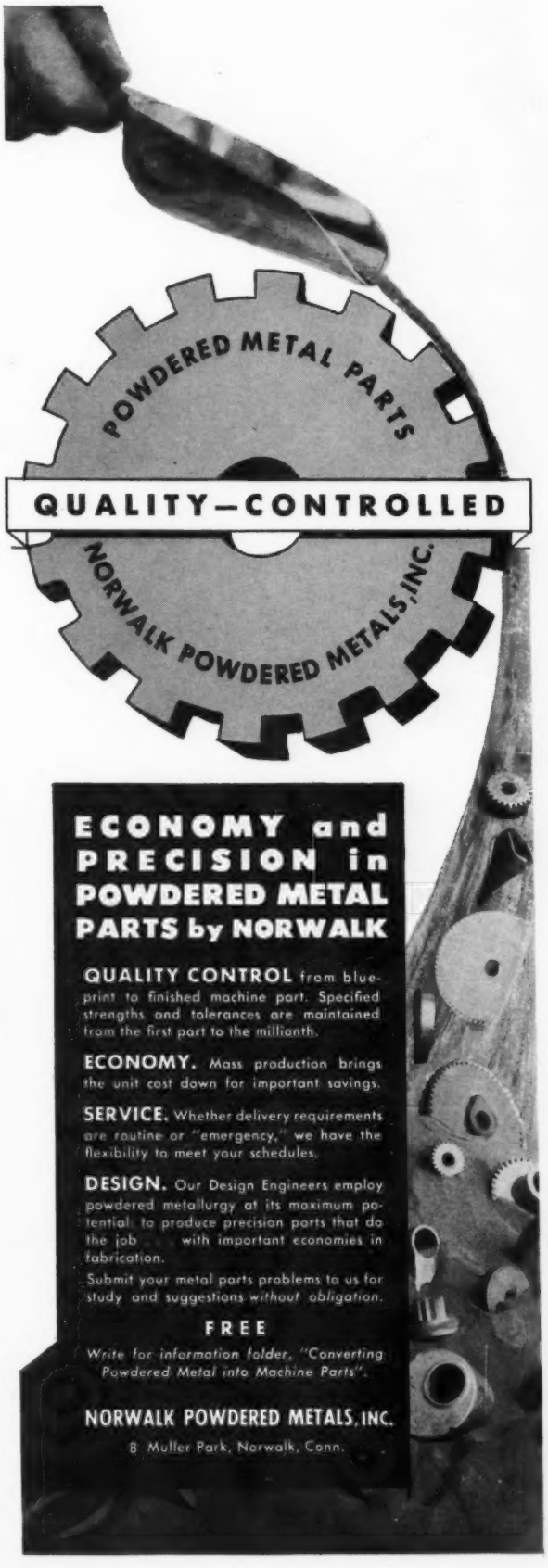
**NATIONAL LOCK**

FASTENERS AND COLD-HEADED PRODUCTS, STANDARD OR SPECIAL-PURPOSE...THEY'RE DESIGNED TO YOUR SPECIFIC REQUIREMENTS AND ENGINEERED TO COST YOU LESS!



**NATIONAL LOCK COMPANY**
ROCKFORD, ILLINOIS
FASTENER DIVISION

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**QUALITY CONTROL** from blueprint to finished machine part. Specified strengths and tolerances are maintained from the first part to the millionth.

**ECONOMY.** Mass production brings the unit cost down for important savings.

**SERVICE.** Whether delivery requirements are routine or "emergency," we have the flexibility to meet your schedules.

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Submit your metal parts problems to us for study and suggestions *without obligation.*

**FREE**

*Write for information folder, "Converting Powdered Metal into Machine Parts".*

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8 Muller Park, Norwalk, Conn.

# For proved reliability...

## range engineers everywhere choose the TE electric thermal eye

**Time-tested.** Trouble-free operation in the field is proof positive of the Robertshaw TE Electric Thermal Eye's success story. If you have not already received samples or complete information on the new TE2, write today. We will be happy to furnish you with full details. **Indiana Division, Robertshaw-Fulton Controls Company, Indiana, Pennsylvania.**

VMA 8766

Robertshaw

MR CONTROLS

"DREAM" APPLIANCES AT:

*(Left to right)*
GERAN
PAYNE
BROOKER

EXCLUSIVE MPM PHOTOS

# AHLMA's seventh annual parts and service conference

*AN MPM STAFF REPORT*

PRACTICAL AND IDEOLOGICAL improvements mixed thoroughly with an element of chastisement proved to be the ingredients for the seventh annual Parts and Service Conference sponsored by the American Home Laundry Manufacturers Assn.'s Parts and Service Committee. It was held on Sept. 24 in the Boulevard Room of Chicago's Sheraton Towers Hotel.

Theme of the program was "If I could design a washer, dryer, ironer, combo. . ." solely for service . . . for dealers . . . for customers . . . for engineers . . . for production . . . for use . . . with each speaker taking a segment of the topic.

Robert S. Geran, general service manager, Kelvinator, was the conference chairman, and speakers included R. E. Brooker, president, Whirlpool Corp.; David McDermand, product manager, Home Appliance Div., Hamilton Mfg. Co.; S. Robert Payne, general service manager, The Maytag Co.; and D. B. Fighter, works manager, Mansfield Plant, Westinghouse Electric Corp. Also on the program were appliance dealer George Johnston, vice president of Johnston's Inc., Minneapolis, Minn., and Maxine Livingston, Family Home editor, *Parents'* magazine.

Payne presented to his audience what he considered to be the ideal piece of laundry equipment for service. First, and possibly under preventive maintenance, he emphasized that he would advocate a new concept in packing and packaging appliances. It would be packaged with a liquid styrofoam material which would solidify around the appliance so that no damage could occur in shipment. Upon receipt by the eventual buyer, a liquid chemical would be squirted on the appliance and the styrofoam would disintegrate.

More possibly in the realm of practicality, Payne's suggestions included a flexible hose that would stretch two or three times its compressed length to reach the water faucet, a gyroscope balancing system similar to that used in ocean liners, for keeping the appliance level when the tub is spinning, a "service failure panel" that does its own diagnosing with a set of signal lights when something is wrong, a printed circuit panel to eliminate the wiring harnesses, and self-sealing bearings to eliminate water and grease leakage.

Payne also suggested that the front panel of the appliance should be easily removable. Should it be necessary to service a part located at the rear, the whole working mechanism would be mounted on glides and slide out at the push of a button for service accessibility.

EXCLUSIVE MPM PHOTOS

### Combo a transitional appliance?

McDermand emphasized that, in designing for today's appliance dealer, the dealers must be broken up as to different markets and areas. As an example, a semi-rural community dealer would sell different features than a large, promotion-minded, big-city dealer.

The Hamilton product manager advocated a short line—one appliance of each type—"to answer the inventory problem." He said all price brackets should be covered, though, and the appliance styled to look good for the next several years. His ideal combo would have only two basic controls: (1) a mechanical on-off switch (2) an audio-sensitive programming switch by which the housewife could talk to the machine.

Still on the subject of the combo, McDermand stated that this is a transitional appliance and that, "in the future, we will do our laundry with a simplified appliance which will consume a total of one-half of a gallon of water."

At the close of his speech, McDermand declared himself in favor of planned obsolescence. "Buying an ap-

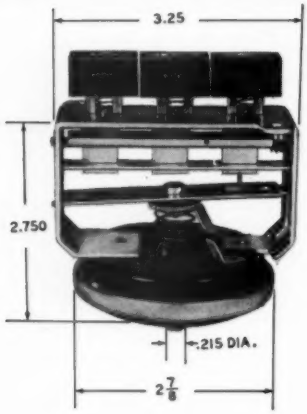
MCDERMAND JOHNSTON MRS. LIVINGSTON LYNCH FIGHTER

# You Can Obtain Three Preset Levels ...AUTOMATICALLY

WITH

ACRO **PUSH BUTTON**

# MULTI-LEVEL PRESSURE CONTROL




The Acro Pressure Control is a precision device normally used to control a height of liquid within very close limits. The control has two compartments, separated by a sensitive diaphragm. One compartment contains a highly sensitive built-in Acro Snap-action Switch. The other compartment is a trapped air pressure chamber. Variations in pressures are transmitted directly to the diaphragm, through a built-in connecting tube. The movement of the diaphragm, caused by variations of pressure, actuates the switch mechanism.

**FEATURES**

- Precision Snap-action Mechanism
- Factory Calibration to close tolerances
- Wide range of operating pressures
- U. L. Approved 20 amps, ⅓ HP, 115-230 VAC
- Spade type, quick disconnect terminals
- Corrosion resistant
- U. L. Approved for mounting below water level
- High Contact pressure maintained at all operating settings
- Positive Action — no creeping or fluttering

**STANDARD SETTINGS**

| Setting | Operating Range |
|---|---|
| Low | 5.5″ ± .5″ Water Column |
| Medium | 7.5″ ± .5″ Water Column |
| Normal | 9.5″ ± .5″ Water Column |
| Reset | Greater than next lowest operating pressure |

**OPERATING CHARACTERISTICS**

| | |
|---|---|
| Contact Arrangement | S.P.D.T. |
| Electrical Rating | U.L. Approved ⅓ HP, 20 Amps, 115-230 VAC |
| Air Connector | 7/32″ Outside Diameter |
| Plating | All ferrous metal parts are cadmium plated-Chromate treated |

Optional Features Available: Surge Dampener; Contact Arrangements S.P.N.O., S.P.N.C.; Special Settings (consult factory); ½″ Air Connector tubes

ACRO DIVISION

RELAYS ACRO SWITCHES

Robertshaw-Fulton CONTROLS CO.

COLUMBUS 16, OHIO

"OUR 20th YEAR"

*Manufacturers of a complete line of load-tested precision snap-switches and relays.*


pliance should be an emotionally-charged act, akin to a man purchasing a new car or a woman buying a new hat."

### Eight-point dream washer

In his talk, appliance dealer Johnston outlined eight points which he requested manufacturers to build into his "dream" washer. They were:

1. Put the serial number and model number out in front and always in the same place. This would help inventory control and parts delays.
2. Build the washer so it can be quickly and easily serviced from the front.
3. Standardize parts such as timers, screws, hinges, and knobs throughout the whole industry.
4. Print the wiring diagrams on the machine where the serviceman can read them.
5. Thoroughly test the machine before marketing.
6. Build for easy operation mechanically. Build into the machine a permanent instruction panel.
7. Don't keep face-lifting the machine. Sell the machine on its stability. Any changes should be a decided improvement.
8. Build in a true dealer profit.

### Engineering tied to other factors

General Electric's Lynch pointed up the interrelationship between engineering and the factors of performance, cost, reliability, market appeal, and timing. However, he stated that the conflict lies not between engineering and these factors, but between the factors themselves. "As an example, if improved market appeal lies in the addition of certain automatic features, these additions must subtract from reliability, since more parts are required. The more parts that go into an appliance, the less the reliability."

Therefore, Lynch's "dream" product "is not so much a particular type of design as one in which all functions, including management, have actively participated in the decision processes during its creation in order to assure a product that is a true business optimum."

### Standardization for production

The area of designing an appliance solely for production went to Westinghouse's Fighter. His answer to the ideal appliance lay in standardization of models, parts, and equipment. Said Fighter, "I don't think each model should be a carbon copy of the previous one or the one a step lower in the same model year, but a line of appliances should contain only enough models to give the customer a choice. Each model should use as many parts, components, and features included on other models as possible."

Fighter's proposal was to have a

*to Page 106* →

## Metal Finishers Assn. Fills Committee Posts

Key committee posts were filled recently, according to A. T. Leonard, Superior Plating, Inc., Minneapolis, president of the National Assn. of Metal Finishers.

Appointments included: membership-public relations, Robert L. Giesel, Adolph Plating, Inc., Chicago; educational, Edward N. Marlette, Marlette Plating Co., Buffalo, N.Y.; constitution and by-laws, James E. Cogan, Jr., Globe Electroplating Co., Philadelphia; ethical and standard practices, John T. Hyduke, Durable Plating Co., Cleveland; standards and specifications, Henry A. Kafarski, Chemical Processing, Inc., Detroit; industrial liaison, Charles R. Leva, Levco Metal Finishers, Inc., Long Island, N.Y., and John Palik, Jr., National Plating Corp., Cleveland; liaison, American Electroplaters' Society, James E. Cogan, Jr.; and liaison, Metal Finishing Suppliers' Assn., Harold W. Baker, Electro-Galvanizing Co., Chicago.

## NAMA Exhibit To Feature New Coffee Vending Machines

Improved coffee vending machines, including units which are sized and shaped like file cabinets, are expected to be featured at the 13th annual convention and exhibit of the National Automatic Merchandising Assn. Oct. 31-Nov. 3 at Chicago's Navy Pier.

Wallace T. Collett, general convention chairman, has said that, "With more than 500 companies and 2,200 persons already registered, we expect the largest industry turnout in the history of NAMA. Already exhibit floor space sold has increased 5 per cent over last year.

## ARI Plans "Live" Display At Exposition, Nov. 2-5

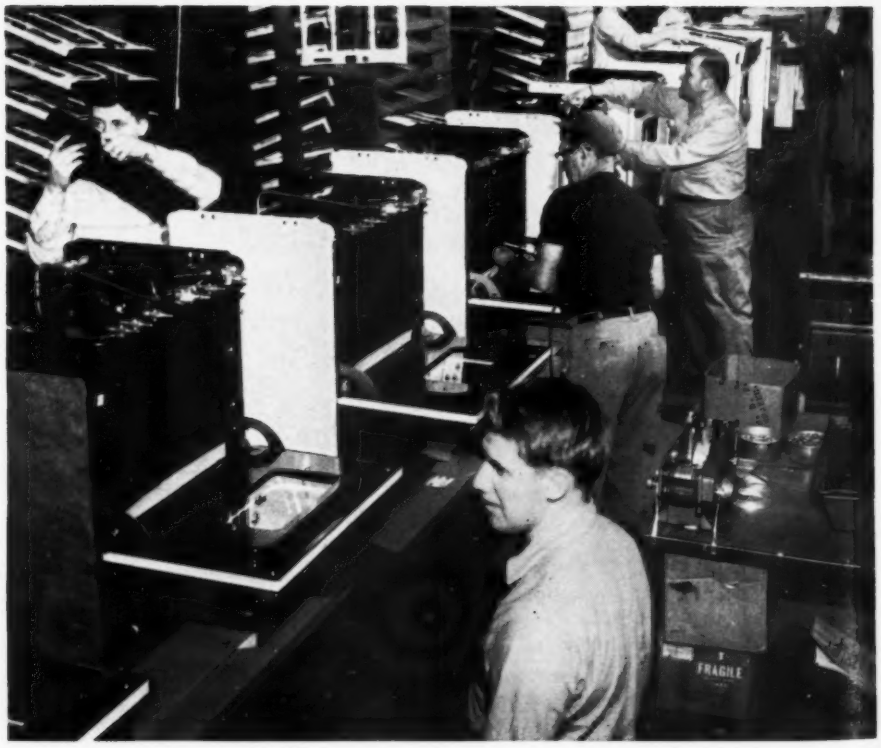
Plans for a "live" display of the latest types of automotive air conditioning equipment were announced by George E. Mills, show director of the 11th exposition of the Air-Conditioning and Refrigeration Industry. The show will be held at Atlantic City, Nov. 2-5, and more than 15,000 visitors are expected.

## Hainer Named ABMA Trustee

Fred W. Hainer, executive vice president of Cleaver-Brooks Co., and president of Springfield Boiler Co., a wholly-owned subsidiary, has been named a trustee and elected to the executive committee of the American Boiler Manufacturers Assn.

THE BRIGHT TOUCH
BY PYRAMID
ADDS THE RIGHT TOUCH
TO YOUR SALES!
Pyramid sparkling stainless trim adds the *right* touch that means the difference at point of sale! From simple trim to complex frames, Pyramid's wide line of metal mouldings can help you put the sale across by providing the *extra* spark that means *extra* sales.
Economical, too. Individual frames, for example, can be tailored from standard sections—providing originality at little or no tool cost. Or intricate rings can be roll formed in endless spirals—eliminating waste, yet holding close tolerances.
And if your needs are special, you'll find you'll do much better working with specialists. Pyramid has specialized in making metal mouldings for over thirty years.
Why not put this experience to work for you—today!
Pyramid Mouldings Inc.
5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL.
UPLAND, CALIFORNIA
BRONXVILLE, NEW YORK

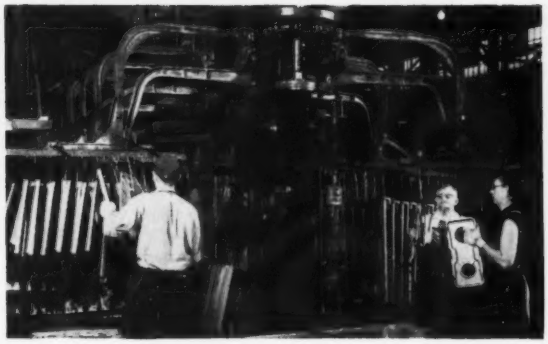
# USS Vitrenamel takes severe shaping,



# fires without flaws

The George D. Roper Corporation has a proud slogan—"America's Finest Gas Appliances." When you walk through the Roper plant at Kankakee, Illinois, you see why. Their volume is high but their standards are higher. Every part they make is painstakingly inspected to eliminate flaws.

Roper uses quality USS Vitrenamel enameling sheets for stove parts. The metal is highly ductile —takes severe shaping without cracks. It takes a smooth porcelain coat that fires with complete freedom from surface defects. And Vitrenamel parts retain their true shape when fired because the low carbon and manganese content gives the metal resistance to warpage and sagging at high temperatures Specify USS Vitrenamel, available in sheets or coils. *USS and Vitrenamel are registered trademarks*



United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

**United States Steel**

USS

*PEP PROGRAM AND PROJECT RAINBOW*

# Porcelain enamel industry launches new promotion program

## appliance executives "talk turkey" at PEI 28th annual meeting

*AN MPM STAFF REPORT*

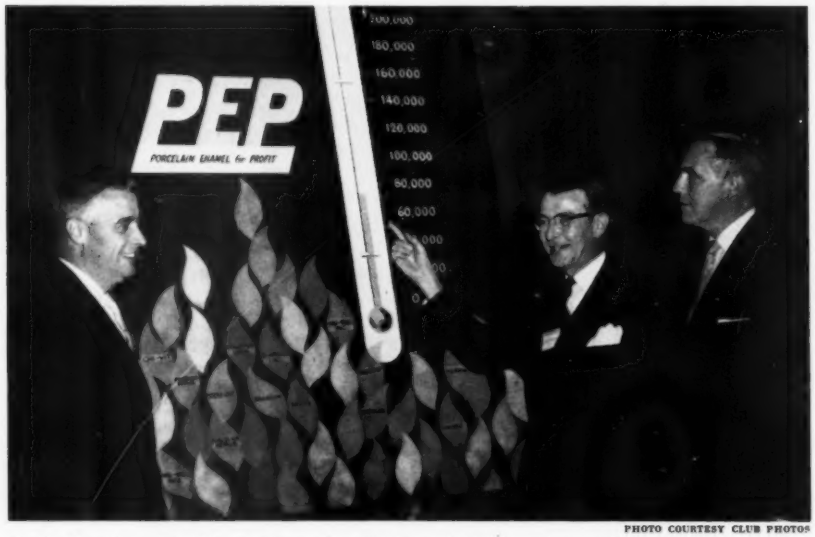



PHOTO COURTESY CLUB PHOTOS

*J. K. Keating, Challenge Stamping & Porcelain Co., J. R. McCord, Ferro Corp., and N. Palmer, Palmer, Codella & Assoc., inspect contribution thermometer for* PEP *program.*

THE MOST AMBITIOUS promotional program ever launched by the Porcelain Enamel Institute was approved by the Institute's membership at its 28th annual meeting, September 24-26 at the Greenbrier Hotel, White Sulphur Springs, W. Va.

John R. McCord, chairman of the Market Development committee of the Institute, in introducing the new promotional program to the membership, said that its objective is to double by 1967 the industry's 1957 volume.

"We believe we have developed a promotional program for the future with a complete recognition of statistical trends in our markets and the possible impact of competitive materials, such as plastics and new paints as well as new developments under way in our own industry," McCord said. "The future, if developed by market promotion and new products," he said, "could mean a $300-million bonus of porcelain enamel products by 1967."

"Every field or market of concern to the industry," he said, "will hear more about porcelain enamel through every effective means of communication — advertising, direct mail, point-of-sale material, publicity, and trade and newspaper promotions. Consumer promotion will be backed up by trade advertising and direct mail to the appliance, plumbing and cabinet manufacturers and others," McCord stated.

"For many people, porcelain enamel means the mottled blue and white dishpan of their grandmother's time," said R. N. Smith, president of the Institute. "The expanded promotional program is designed to show the outstanding qualities and beauty of modern porcelain enamel and how it has become an important material in many areas of our life."

### Four points for profits

In his keynote address, C. K. Rieger, new vice president, marketing services, General Electric Co., and formerly vice president and general manager, Major Appliance Division of GE in Louisville, gave four points for running a profitable appliance manufacturing business.

"The appliance business is a profitable business," he said, "and GE didn't put over $75 million in building Louisville's Appliance Park lightly." The points are: planning, organizing, integrating, and managing — the "*POIM*" of appliance manufacturing.

EXCLUSIVE MPM PHOTO

*PEI President R. N. Smith, Temco, Inc., and C. K. Rieger, General Electric Co., discuss meeting procedures.*

### Planning and organizing

The following are additional brief excerpts from Rieger's statement:

"We believe in putting all the ideas in writing. . ."

"Unless the job is going to make money now or later on, you shouldn't do it. The number one objective is not to be the biggest or take the highest per cent of the industry. Profit is number one, and should be clearly defined.

In discussing organizing, Rieger said, "After deciding the size you want to be, and the profits you want to make, the next step is to organize for it. We organized de-centralized. . . Louisville has no staff overall manager of manufacturing or overall manager of marketing; these have been dispensed with. This places the responsibility directly on the manager of marketing and manager of manufacturing for the specific product division. We think this is a greater stimulus to more profits than anything else that has been done. These men have the authority, but they have the responsibility with it."

In discussing the streamlined organization, Rieger slipped in a quotation which drew applause when he said, "*A camel is a horse that was designed by a committee.*" His point is that decisions can be made, right or wrong, quicker with the setup he suggests than through

*to Page 68* →

# BOLDNESS OF VISION *is an attribute of*

# QUIET MINDS

You know the kind. You may be one yourself—the quiet man who thinks and ponders and reflects on a problem until the answer, often an unexpected one, comes to light.

The quiet minds at Pemco have produced some great advances in the ceramic industry. If you're tackling a new idea that will involve the factors of inorganic materials, time and temperature, Pemco would like to work with you.

RESEARCH AND A FLAME

**PEMCO**

Ceramic frits, inorganic pigments, vitrifiable glass colors

BALTIMORE 24, MARYLAND

## PEI meeting

→ *from Page 66*

committees or more complicated staff organizations.

### Integrating and managing

"Integrating is nothing more than communication," said Rieger. "The written word is one method; many times these don't get through and are misunderstood. The toughest thing in the business is that the higher you are, the less you know what is going on. . .

"The real communication to the man in the shop is through the foreman, and the foreman, in most cases, is not made a part of management. The old rules are, 'Thou shalt not tell what you are doing. Thou shalt not tell what you are making.' The biggest department we have at GE is refrigeration, with 5000 people. The man in charge talks to these people in groups of not more than two hundred at a time. He tells them what the sales are, what the net profits are, why they are that; the men in the plant are interested, and the facts are not mistreated. When people really know what you are trying to do and what you are trying to accomplish, they do a much better job of working."

Here are a few excerpts from Rieger's statement on managing:

"In the last five years, we have eliminated 70 per cent of the formal reports in Louisville. . .

"We maintain that we can double our production every five years without addition of people, by plowing money back into the business to modernize and mechanize." (*Rieger made it clear that he does not favor the word "automate."*)

"Lack of material, components, or lack of planning can cost a great deal in production. We haven't started to work on efficiency as yet. . ."

### Cut prices can ruin an industry

James A. Bourke, vice president commercial loans, Division C, The First National Bank of Chicago, told the PEI membership that "the weakness in the enameling industry is the cut price system which enables the weak salesman to sell the boss on cutting prices to get business."

Bourke showed a chart from Robert Morris Associates, headed "Enamel Sanitary Ware." Two classifications, companies from $250,000 to $1 million in size (small companies) and from $1 million to $5 million (medium-size companies), were compared for the years 1947 and 1958.

In 1947, the "small company" showed a net profit of 5.4 per cent; the "medium-size company" showed a net profit of 5 per cent. In 1958, the "small company" showed a net profit of 1.09 per cent, and the "medium-size company" a net profit of 1.86 per cent.

In this table was a net profit to net worth ratio which showed a percentage of 15.9 for the small company in 1947 and 18.9 for the medium-sized company. In contrast, during 1958 the net profit to net worth ratio was 4.73 per cent for the small company, and 4.33 per cent for the medium-sized company.

Bourke stressed the fact that the industry must raise prices and quit cut price competition or individual companies would be pricing themselves out of business.

### Selling makes the company

"Buyers do not always want the best price, but more often the best product," according to S. J. Randall, president and managing director of General Steel Wares Limited, Toronto, Canada, the largest independent appliance and housewares manufacturer in Canada, with an annual sales volume of more than $36 million.

Speaking before the PEI meeting, Randall said, "When a manufacturer has found a field which has need for his product, 99 times out of 100 he can turn that need into sales." Randall's remarks were based on the theme of the meeting, "The challenge of profits." He urged all those who have selling responsibility to know the benefits of their product, the benefits their products have to offer. "Then plus-sell these benefits to those who want and need them," he said, "and plus profits will follow."

"The only man who makes money works in the mint," said Randall. "The rest of us have to earn it, especially salesmen. If you want to earn big money as a highly-paid management executive, you have to prove yourself competent in times of adversity." Speaking to the executives, he said, "Profit is your responsibility. That's where you can prove you are a success. Money comes after success, not before, for the company and for the industry."

In referring specifically to his own company, Randall said, "After analyzing the weaknesses of our company's distribution pattern, we decided to abandon $2.5 million of business (of the $36 million for 1958) the first of January this year. We approached 1959 with an entirely new concept of where our company was going — in the many diversified lines (over 2000 lines including all major appliances)."

"In the first seven months of 1959, we have not only replaced the $2.5 million of business we discontinued, but have increased our sales by $1.5 million. We anticipate that before the end of 1959 our total sales volume will reach $40 million."

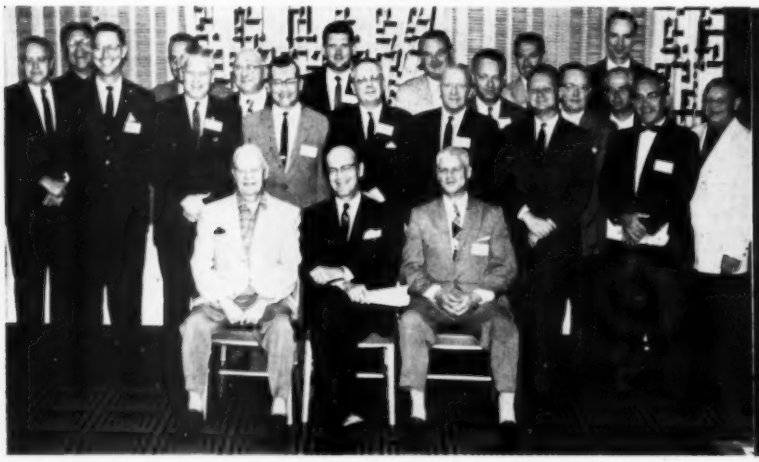
### Selling problem

"Three hours a day is devoted to selling by the average salesman," said Randall, " . . . out of every eight hour day. That's how long he works calling on people who can buy something." In re-

*to Page 84* →

EXCLUSIVE MPM PHOTOS

*The board of trustees of the Porcelain Enamel Institute pose before the camera at the 28th annual meeting at the Greenbrier Hotel.*



*Speakers W. E. Hill, W. E. Hill Co., and S. J. Randall, General Steel Wares, Ltd., with Program Chairman P. H. McLaughlin, Stauffer Chemical Co. and speaker J. A. Bourke, First National Bank, Chicago.*

# AUTOMATIC FLOW COAT EQUIPMENT

## for the Home Laundry Industry

Chicago Vit LEADERSHIP first brought you ALKALI RESISTANT GROUND COATS . . . first brought you STEAM VAPOR RESISTANT GROUND COATS . . . first brought you ALKALI RESISTANT TITANIUM COVER COATS . . . Now brings you AUTOMATIC FLOW COAT EQUIPMENT—exclusively engineered and manufactured by Chicago Vitreous.

Ask your Chicago Vitreous representative to discuss the uniform quality and other production advantages that flow coating may hold for you.

Chicago Vitreous CORPORATION

A Division of the Eagle-Picher Company
1425 South 55th Court Cicero 50, Illinois

# Gas industry to treble research activity by '65

AN MPM STAFF REPORT

THE 41ST ANNUAL CONVENTION of the American Gas Association under the banner "New horizons for growth and service" was held in Chicago, October 5-7. Approximately 3,000 delegates attended. The general trend of discussion and papers was on the subject of what may be expected in the next decade of business in relation to appliances (products and business), utilities, and pipe lines.

### Big increase in research

President J. Theodore Wolfe of AGA, in his address to the convention, estimated that the industry's total outlays for research will advance from the present $4.8 million to about $15 million. AGA, alone, he said, will boost research spending by 39 per cent next year, from $1.8 million to $2.5 million. This move, he said, is the first step in a longer term effort to raise the Association's cooperative research expenditures to $6 million a year by 1965.

In reporting on the past year, Wolfe said that the industry has been setting new records in customers served, in gross plant investment, in revenues, and "best of all," in net earnings.

In referring to competition, Wolfe said, "Stung by the effectiveness of the gas industry's sales and promotional attack, competitive industries have mounted what they doubtless hope will be effective counterattacks . . ."

In referring to industry research, he had this to say to the gas appliance manufacturers: "It is . . . imperative that gas appliance manufacturers raise the level of their research expenditures, and that gas utility companies continue the research activities they are carrying on individually, so that the total research effort of the gas industry will treble by 1965. Research is the life blood of an expanding industry which looks to *new horizons for growth and service.*"

### 103 million gas appliances

Edward A. Norman, president, Gas Appliance Manufacturers Association, gave a picture of the commercial and residential gas appliances now in use.

"There are now more than 103 million residential gas appliances in use," he said, "including three-and-a-half million gas refrigerators, half a million incinerators and 400,000 gas dryers."

*Wister H. Ligon (left), president of Nashville, Tenn. Gas Co., heads the American Gas Association's new slate of officers elected Wednesday (Oct. 7) during AGA's 41st annual convention in Chicago. Other new officers are (l to r.) Lester T. Potter, president, Lone Star Gas Co., Dallas, first vice president; E. H. Smoker, president, The United Gas Improvement Co., Philadelphia, second vice president; and Vincent T. Miles, treasurer, Long Island Lighting Co., Mineola, N. Y., treasurer.*

Norman pointed to the importance of the more than 15,000 ranges in classrooms throughout the country, and indicated that over 83 per cent of these are gas-operated. "Each year," he said, "they are helping to indoctrinate millions of young women who are only a few years from becoming housewives and homemakers on their own."

### Quality — not price

Norman said that events during 1959 would bear out the belief of many manufacturers that the public will accept and pay for quality, when and where quality — not price — is merchandised and the market is conditioned to it. He pointed to the fact that, while factory shipments of free-standing gas ranges have increased 5.9 per cent over last year, dollar volume has gone up 9.3 per cent. "Even allowing for inflation," he said, "this dollar advantage can be traced largely to the promotion and acceptance of Gold Star specifications." *(To date the Gold Star program has been confined to gas ranges.)*

This speaker reported that the heating equipment manufacturers are now considering a collective advertising and promotional program designed to be tied in with any effort AGA may make in that direction.

In pointing to the importance of merchandising, Norman said, "But let's not lose sight of the importance of aggressively *merchandising* better equipment into the new home and into the modernization project. This will require your gas-conditioning the builder, conditioning the dealer, conditioning the creator of the model home . . . . where the style is established for all the surrounding communities."

### Gas from Canada

In a speech before the AGA convention, Carl O. Nickle, Calgary, Canada, publisher of the *Daily Oil Bulletin*, said that Western Canada constitutes a major natural gas source for the future, both for Canadian and American consumers.

"I am confident," he said, "that within three years exports of Western Canadian gas to U. S. markets will triple to over 1,100 million cubic feet daily, while Canadian markets will grow to an even larger volume. I am confident that the projects now proposed will be approved and built, will spur accelerated gas reserve growth in Western Can-

ada, and set the stage for more market expansion."

### New officers for AGA

Wister H. Ligon, president, Nashville Gas Co., Nashville, Tenn., was elected president; Lester T. Potter, president, Lone Star Gas Co., Dallas, Texas, first vice president; E. H. Smoker, president, The United Gas Improvement Co., Philadelphia, Pa., second vice president; and Vincent T. Miles, treasurer, Long Island Lighting Co., Mineola, N.Y., re-elected treasurer.

Among the new directors elected were two representing major appliance manufacturers. They are Wendell C. Davis, president, Cribben & Sexton Co., and Elisha Gray II, chairman of the board, chief executive officer and director, Whirlpool Corp., St. Joseph, Mich.

### Modern kitchen display

In the exhibit hall of the Conrad Hilton Hotel, a series of modern kitchens were on display by leading producers of kitchen equipment and shelter publications. Among the companies represented were Mutschler Bros. Co.; Youngstown Kitchens Div., American Standard; The I-XL Furniture Co.; Toledo Desk & Fixture Corp. (Beauty Queen); Whirlpool Corp.; St. Charles Mfg. Co.; and Geneva Modern Kitchens. In addition to these, Good Housekeeping had the "Lanai" kitchen and the "Cafe" kitchen; Elkay Manufacturing Co. had a complete exhibit of stainless steel sinks; and the gas industry had its New Freedom Gas Kitchen.

Many products of the major appliance manufacturers were included in these kitchens, ranging from a modern incinerator by Waste King to a combination intercom and FM-AM radio systems by Nutone.

Dixie Products, Inc. foldaway burner units were installed in the Mutschler kitchen; "coppertone" was in evidence on many appliances; sinks in the exhibit kitchens were predominantly stainless steel, although porcelain enameled steel and cast iron were represented.

Many of the modern kitchens incorporated steel cabinets with attractive wood fronts and doors. The representative at the Beauty Queen exhibit said that the wood fronts increased usage of steel, and that the all steel cabinet sales were up 23 per cent, in addition to the sale of steel cabinets with wood fronts.

An interesting feature of the St. Charles exhibit was their "roving" rotisserie, consisting of a Roper rotisserie unit mounted in a cabinet with rollers or "wheels." It is designed for operation from either a permanent gas source or on bottled gas. St. Charles also showed wood fronts with vinyl inserts for steel cabinets.

Perforated and expanded metals were used extensively for decoration, trim, and for ventilation above built-in refrigeration.

# Responsibilities of a manufacturing services manager for an appliance manufacturers plant

A news item in the personals column of October MPM carried the announcement of Robert Walker's appointment as Manufacturing Services Manager at Cribben and Sexton Company, Chicago. We asked Mr. Walker to give us a concise description of the function of his office at Cribben and Sexton Company. The following represents his reply to this request.

. . . . . .

YOUR QUESTIONS regarding the functions of a "Manufacturing Services Manager" are not unusual since this title was virtually unheard of until well after World War II. It includes responsibility beginning with the long-range Sales Forecast and establishing of finished goods inventories and production schedules consistent with the long-range planning policy of the company. Major functions handled include purchasing department, production control department, all material handling personnel within the plant, and shipping and receiving departments. The principle is basically to make a single functional department responsible for the administrative support of the manufacturing operation and thus leave the manufacturing manager free to concentrate on the hiring, training, discipline, and efficiency of direct-labor manufacturing personnel.

Organizationally, the manufacturing services manager reports to the president along with the manufacturing manager, sales manager, controller, and personnel manager. In some companies this total responsibility has been gradually moved together and the title "Material Manager," "Purchasing Agent," "Director of Material," and similar titles applied.

We have found three tremendous advantages in this type of organization:

First, the age-old triangle between production control-purchasing-manufacturing has been broken. With purchasing and production control a singular department, the responsibility begins with the establishment of a final assembly schedule and leaves the responsibility of support of all purchased parts, manufactured parts, sub-assemblies, and movement of material from the vendor, to the plant, and through the plant, the direct responsibility of manufacturing services. Either manufacturing is supported in the schedule that has been established for the assembly of finished goods or manufacturing services has failed to meet its responsibility.

Secondly, when the changing market requires radical adjustment of long-range sales forecasts, it is the responsibility of manufacturing services to establish with factual data the possibilities of schedule changes and the cost in inventory investment, premium for overtime, and accelerated transportation needs for presentation to management. Manufacturing services must see clearly both the short-range and long-range profitability of requests for changes in production schedules. With proper factual data (all too often either not available or available too late), it is possible to make quick decisions to meet changing market needs without committing the plant to unrealistic or too costly production targets.

The third item is one of the most important of all: Inventories have been drastically reduced, yet actual flexibility to meet changing sales needs has been increased. The inherent flexibilities of the manufacturing operation have been matched, along with those of vendors, to the *areas* of flexibility which are recognized as specific sales needs. The high turnover rate of inventory is a measure of the teamwork in the sales-manufacturing services-manufacturing functions.

The method of organization has been highly successful in the Waste King Corporation plant in Los Angeles and has recently become an organizational reality at Cribben and Sexton Company.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Use Christmas Seals

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Here at Fahralloy we believe in giving service as well as manufacturing top quality heat and corrosion resisting castings. In fact, service is a keystone upon which our business has grown over almost a quarter of a century. Sitting here at the hub of industry in the heart of America we're never more than a few hours away from you at most. No matter what your problem may be if a heat and corrosion resisting casting is involved, you'll find the solution at Fahralloy. Try us and see for yourself.

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**Fahralloy serves the nation and the nation's leading industries with heat and corrosion resisting castings.**

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- CHEMICAL
- DRUG
- FARM EQUIPMENT
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- GENERAL MANUFACTURING
- PUMP MANUFACTURERS
- STEEL

# the fahralloy co.

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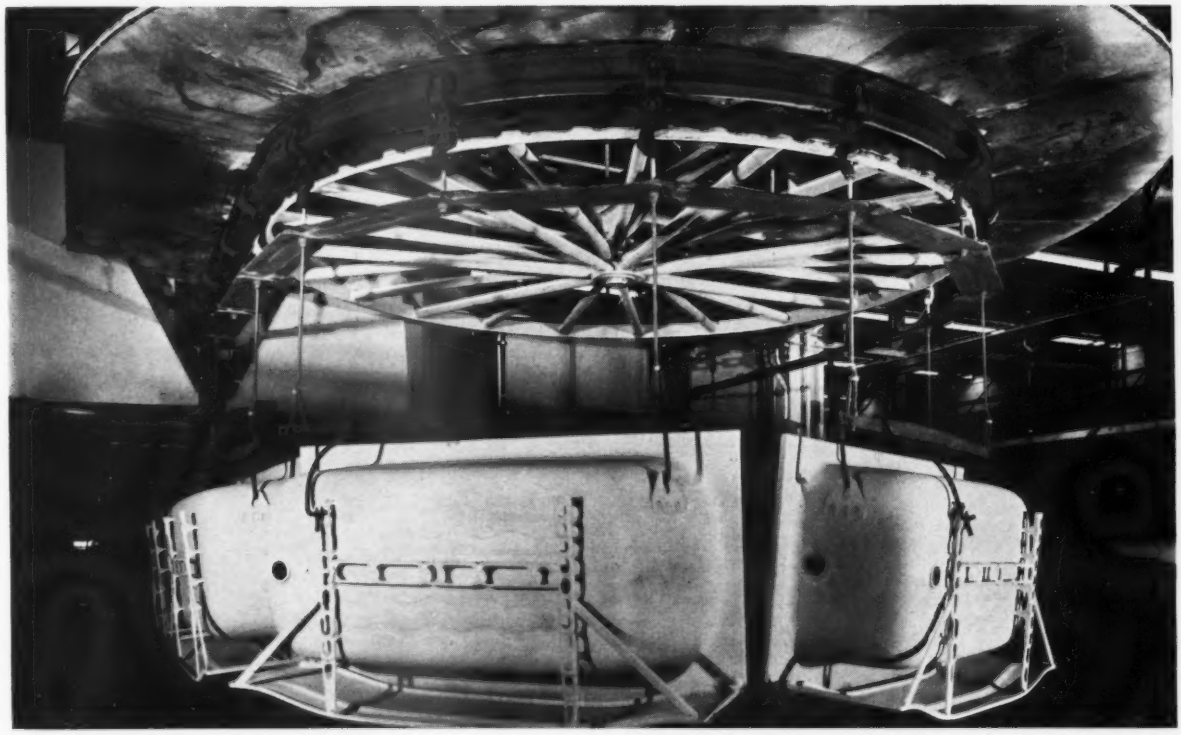
150TH AND LEXINGTON AVENUE • HARVEY, ILLINOIS

# LINK-BELT trolley conveyors

## run parts continuously through finishing systems



**PLUMBING FIXTURES** ride a mile-and-a-half network of Link-Belt trolley conveyors at Briggs Manufacturing Co., Warren, Mich. The Ferro Corporation of Cleveland furnished enameling facilities—chose Link-Belt trolley conveyors for spray booths, drying ovens, blowoff booths, furnaces. Above, bathtubs make 180° turn to enter furnace. Furnace seal plates protect the conveyor.

*WASHING, PAINTING, COATING, BONDERIZING, PARKERIZING, DIP-GALVANIZING*—practically *any* finishing job can profit from the smooth, low-cost transportation provided by Link-Belt trolley conveyors. These versatile units carry products of all sizes and shapes . . . travel any path, at any speed, for any length. Especially important, they're easily built into spray booths, ovens and other integrated finishing facilities.

Perhaps this versatility can be put to your advantage. With the experience gained on hundreds of trolley conveyor installations—involving products and layouts of all kinds—Link-Belt can quickly answer any questions you have. Call your nearest Link-Belt office today for consultation . . . or write for Trolley Conveyor Book 2330.

**METAL FOLDING CHAIRS** travel on a Link-Belt trolley conveyor system through cleaning, bonderizing, painting and baking operations at American Seating Co., Grand Rapids. System was developed by De Vilbiss Metal Fabricators. (prime contractors for finishing operations) and production engineers of American Seating Co.

**MADE IN A BEARING PLANT BY BEARING SPECIALISTS!** Precision-made Link-Belt ball bearing trolleys are designed to maintain continuous rolling contact in all positions . . . create minimum power demand. Hardened, concentrically ground raceways, accurately cage-spaced balls, frictionless labyrinth seals—all assure smooth trolley operation.

**LINK-BELT**

**TROLLEY CONVEYORS**

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1, To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,243

# NEW

## SUPPLIES & EQUIPMENT

### Coffee Percolator Thermostat

A probe-type thermostat designed primarily for use in coffee percolators has been introduced. The model A-600 contains all wires, pilot light,

and strength adjustment control so that the percolator itself may be completely and safely immersed in water. In addition, it contains a "keep warm" heating element which maintains coffee temperature after the desired coffee strength has been made. For further information, contact Dept. MPM, American Thermostat Corp., South Cairo, N.Y.

### Pre-Paint Process

An iron-phosphate pre-paint process for iron and steel products has been introduced. The process features an electronic device which provides automatic quality control. The cold iron phosphate operates between the relatively-low temperatures of 90 and 110° F. For further information, contact Dept. MPM, Amchem Products, Inc., Ambler, Pa.

### Air-Operated Marking Pen

The manufacturing industry's first marking tool operated by air—an "air pen" for engraving parts numbers on aircraft and missile components and for marking jigs, tools, and fixtures in general manufacturing operations—has been introduced.

The air pen is also said to be the first marking pen capable of adapting itself to any type of material by adjusting the speed of the blow. The tool's carbide cutting tip is held in a collet for easy removal. For further information, contact Dept. MPM, Thor Power Tool Co., 175 N. State, Aurora, Ill.

### Portable Sand Blaster

Equipped with a newly-designed pistol grip-type blast gun, this portable sand blaster is said to be the most powerful and easiest-to-use unit of its size. It uses all types of abrasives with three sizes of nozzles, and needs no separate or special room. The abrasive can be contained in a small area with a cardboard box or cloth. For further information, contact Dept. MPM, ALC Co., R.D. #5, Box 40, Medina, Ohio.

### Portable Electric Drills

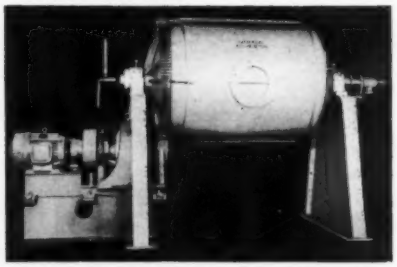
A line of portable electric drills, featuring spade-grip or pistol-grip handle in each model, increased power, and light weight, has been introduced. In seven basic models, the drills are furnished in polished die-cast aluminum housings, with precision geared chucks and series-wound motors for ac or dc use.

For further information, contact Dept. MPM, Speed-way Div., Thor Power Tool Co., 1421 Bamsdale Rd., LaGrange Park, Ill.

### Gas Valves for Heating Plants

A series of gas valves, combining valve and pressure regulator into one unit, has been introduced. Compact in size, the new combinations were designed to save installation time and space on all types of domestic heating plants. A variety of types and sizes are available, and are AGA-listed for all types of gas. For further information, contact Dept. MPM, White-Rodgers Co., 1209 Cass Ave., St. Louis 6, Mo.

### Combination Ball Mill And Reactor



A tool for performing multiple operations in a single processing unit has been developed. Combining the functions of a ball mill and a reactor, the unit makes possible grinding in the presence of controlled temperature and pressure conditions. Access lines permit addition of liquids, slurries, or gases while the mill is in operation. Vapors may be removed while solids are being dried. For further information, contact Dept. MPM, The Patterson Foundry & Machine Co., East Liverpool, Ohio.

### Built-In Locks

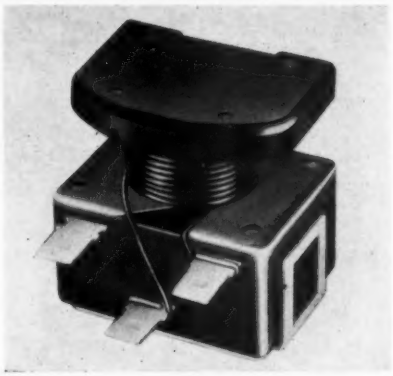
One of four new "Thrift-Line" locks has recently been added to this company's line of built-in locks for office furniture and equipment. The plate-tumbler locks are cast alloy cylinder cam locks. Said to be low in cost and designed for general utility, they have application on drawers, right and left hand doors, lockers, and cabinets. The locks are available nut mounted or clip mounted. For further information, contact Dept. MPM, National Lock Co., Lock Div., Rockford, Ill.

### Holddown Clamps

These holddown clamps operate without shims to the full capacity of the clamp. The clamps are said to be fast and simple to operate. One prong is claimed to be strong enough to hold the work in place when in position. Uses include drill presses, jig borers, planers, punch presses, and universal and vertical mills. For further information, contact Dept. MPM, Insta-Clamp Co., 2420 Home Place, Dearborn 8, Mich.

### Motor Relay For Appliances

The development of a new heavy duty (up to 30 amps, 115 volts), current-type motor starting relay for single-phase ac appliances has been announced. Typical applications are on motors



for dishwashers, clothes dryers, oil burners, submersible pumps, and other stationary equipment having starting loads over 10 amps.

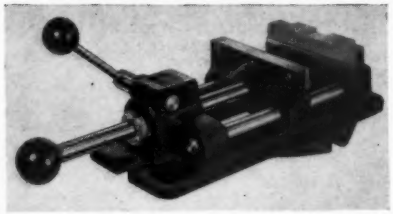
The all-welded relay is constructed with a steel armature centered in a solenoid coil field and has a bridging-type contact arm which is pushed into closed position by armature movement. For further information, contact Dept. MPM, Metals & Controls Div., Texas Instruments, Inc., Attleboro, Mass.

### Rinse Addition

Drainage of plated parts is promoted, and the number of plating rejects is said to be reduced with use of a rinse aid addition agent. Small concentrations added to the hot water rinse are claimed to reduce surface tension. For further information, contact Dept. MPM, Hanson-Van Winkle-Munning Co., Church St., Matawan, N.J.

### Drill Press Vises

A line of precision-built, wide-range drill press vises and fixture holders that are said to safely handle both rigid and non-rigid work



without distortion has been made available. They come in three sizes: 4-inch, 6-inch, and 8-inch, with maximum openings of 5½, 6¼, and 8½-inches, respectively.

A turn of the front adjusting screw bushing varies the jaw pressure from 1 to 1500 pounds. For further information, contact Dept. MPM, L-W Chuck Co., 97 S. St. Clair St., Toledo 4, Ohio.

# JACK-HAMMER FAILS TO FLAKE INLAND TI-CO®!

Crumbling concrete is easy with this powerful paving breaker. It hits with crunching impact at the rate of 1,200 blows per minute with 75,000 ft. lbs. of developed energy. Yet, while thousands of repeated blows actually hammered this TI-CO galvanized sheet into the ground at the point of contact, there wasn't a trace of flaking of the zinc coating!

More proof that you can subject TI-CO sheets to deep-drawing, spin-drawing, punching, crimping, perforating, Pittsburgh lock-seaming or any other tough fabricating process, and you won't flake TI-CO!

That's why Inland TI-CO galvanized sheets are now being used in scores of new applications and products. TI-CO is available in cut sheets or coils in gages 8 to 30 inclusive and widths as great as 60 inches. You can get it with dry, oiled or chemically treated surfaces to meet your production needs. A free, informative booklet will be sent you upon request. For your galvanized sheet requirements, consult your Inland representative.

*Hammer operator runs finger around depression made in TI-CO sheet. Although hammered area resembles a shot-peened finish, the zinc coating has not flaked*

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# NEW INDUSTRIAL LITERATURE

## Low Temperature Phosphating Compound

Descriptive literature and complete technical details on a phosphating compound that operates at a temperature as much as 75 degrees lower than required for conventional phosphating processes may be obtained free of charge. When operated at 95° F., the product provides a paint-gripping zinc phosphate coating on metals equal to those provided by phosphating processes requiring operating temperatures up to 180° F., according to the manufacturer. For the free literature, write to Dept. MPM, Turco Products, Inc., 24600 S. Main St., Wilmington, Calif.

## Ultrasonic Cleaning Primer

A free 12-page ultrasonic cleaning primer for use as a guide by potential users of ultrasonic cleaning equipment has been made available. The primer is designed to provide an understanding of what ultrasonic cleaning is, how it works, areas in which it can be employed, and various solvents and detergents available for use with this kind of equipment. For a copy of the primer, write to Dept. MPM, National Ultrasonic Corp., 111 Montgomery Ave., Irvington 1, N.J.

## Hydraulic Shears Catalog

A line of hydraulic shears with pivoted-blade action is fully described in Catalog No. 2030-A just released. The illustrated booklet provides construction details and specifications on the shears. The catalog will be furnished free upon request to Dept. MPM, Steelweld Machinery Div., The Cleveland Crane & Engineering Co., Wickliffe, Ohio.

## Barrel Finishing Booklet

A seven-point system for scientifically-controlled barrel finishing is detailed in a 36-page, multi-colored booklet just released. A line of tumbling media, barrel finishing compounds, and barrel finishing machines and equipment is listed for the full range of tumbling operations. For a copy of the booklet, write to Dept. MPM, The Carborundum Co., Niagara Falls, N.Y.

## Circuit Breaker Chart

A revised version of the "Interrupting Capacity Chart" is now available. The chart enables users of circuit breakers to select and order the proper breaker for each application. For a copy of the chart, write to Dept. MPM, Westinghouse Electric Corp., P.O. Box 2099, Pittsburgh 30, Pa.

## Gear Speed Reducers

Information on a complete line of helical gear speed reducers is contained in Book 2751. This 20-page book consolidates all of this company's expanded line of helical gear speed reducers in a single catalog. The catalog provides selection data on 20 reducer sizes in double, triple, and quadruple reductions. Tables of load classes and service factors for all reducers, plus selection information on motor couplings and geared flexible couplings designed for use on the reducers are also included. A copy of the book can be obtained by writing to Dept. MPM, Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

## "The Vital Link"

A 24-page illustrated booklet entitled "The Vital Link" is now being offered to members of the home laundry appliance industry. Distributed by the Appliance Parts Jobbers Assn., the booklet emphasizes the importance of the properly-trained serviceman to the appliance industry. Illustrations of clinics being conducted by APJA in the East, Central, and Western sections of the U.S. are included, plus a statement of the association's policy. Requests for the booklet should be made to the Appliance Parts Jobbers Assn., 215 N.W. Park Ave., Portland 9, Ore.

## Solenoid Valve Booklet

An eight-page booklet entitled "How To Specify Solenoid Valves" is being offered free of charge. Included are sections of solenoid valve nomenclature and a description of various types of valve sealing. All sections of the booklet are accompanied by drawings, schematics, and charts. For a free copy, write to Dept. MPM, Valcor Engineering Corp., 365 Carnegie Ave., Kenilworth, N.J.

## Heat Processing Ovens

A six-page bulletin has been published describing a line of industrial heat processing ovens. Both batch type and semi-automatic continuous ovens are illustrated. The ovens are built in four general temperature ranges: 650° F., 800° F., 1200° F., and 1500° F. Typical uses for the ovens include core baking, plastic sheet heating and preforming, ceramic powder drying, paint and enamel baking, and weld stress relieving. To obtain a copy of the bulletin, write to Dept. MPM, Hevi-Duty Electric Co., Milwaukee 1, Wis.

## Porcelain Enamel Color Guide

Forty-seven popular architectural porcelain enamel colors are shown in this handy color guide for architects, designers, and others using porcelain enamel colors. The guide provides an industry-wide, standardized color system and the colors fulfill the criteria of minimum Grade A acid resistance, stability, and reproducibility in low gloss finish within commercial tolerances. Six representative stipple finishes are also shown. For a copy of the color guide, write to Dept. MPM, Architectural Div., Porcelain Enamel Institute, 1145 Nineteenth St., N.W., Washington 6, D.C.

## Hydraulic Press Brakes

A four-page bulletin describes a new line of hydraulic press brakes. Featured is a selection chart which shows the essential differences between mechanical and hydraulic brakes in use, tonnage, stroke, speed, accuracy, and ram adjustment. Specifications and die space

dimensions are given for all 44 models in the 200-1000-ton line. Copies of the bulletin are available by writing to Dept. MPM, Niagara Machine & Tool Works, Buffalo 11, N.Y.

## Adhesive Bonding Of Aluminum

Adhesive bonding of aluminum is the subject of a new booklet now available. Applications, according to the manufacturer, include sandwich panels with honeycomb aluminum cores and aluminum evaporators and cooling coils for home freezers and refrigerators. Chapters deal with design of joints, the various types of adhesives for aluminum, and processing of adhesive joints. Copies can be obtained by writing Dept. MPM, Reynolds Metals Co., Richmond 18, Va.

## Free "Heat Input Calculator" For Welding "T-1" Steel

A detailed booklet on how to weld "T-1" steel has been made available to fabricators and welders. The booklet includes a "heat input calculator" for use in welding "T-1" steel. It is a circular slide rule which determines correct heat amounts as related to amperes, volts, and speed of the welding arc. The calculator is made especially for welders.

Both the calculator and the booklet are provided without cost on request to Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

## Trolley System Booklet

An illustrated booklet covering an industrial trolley system is now available. The system covers all live parts and is said to eliminate the hazards of exposed crane trolley wires. The entire trolley wire is covered by a flexible neoprene duct with a self-closing slot through which the trolley shoe passes. For the booklet, write to Dept. MPM, Northbrook Products, Inc., 230 E. Ohio St., Chicago 11, Ill.

## Welding Cups Catalog

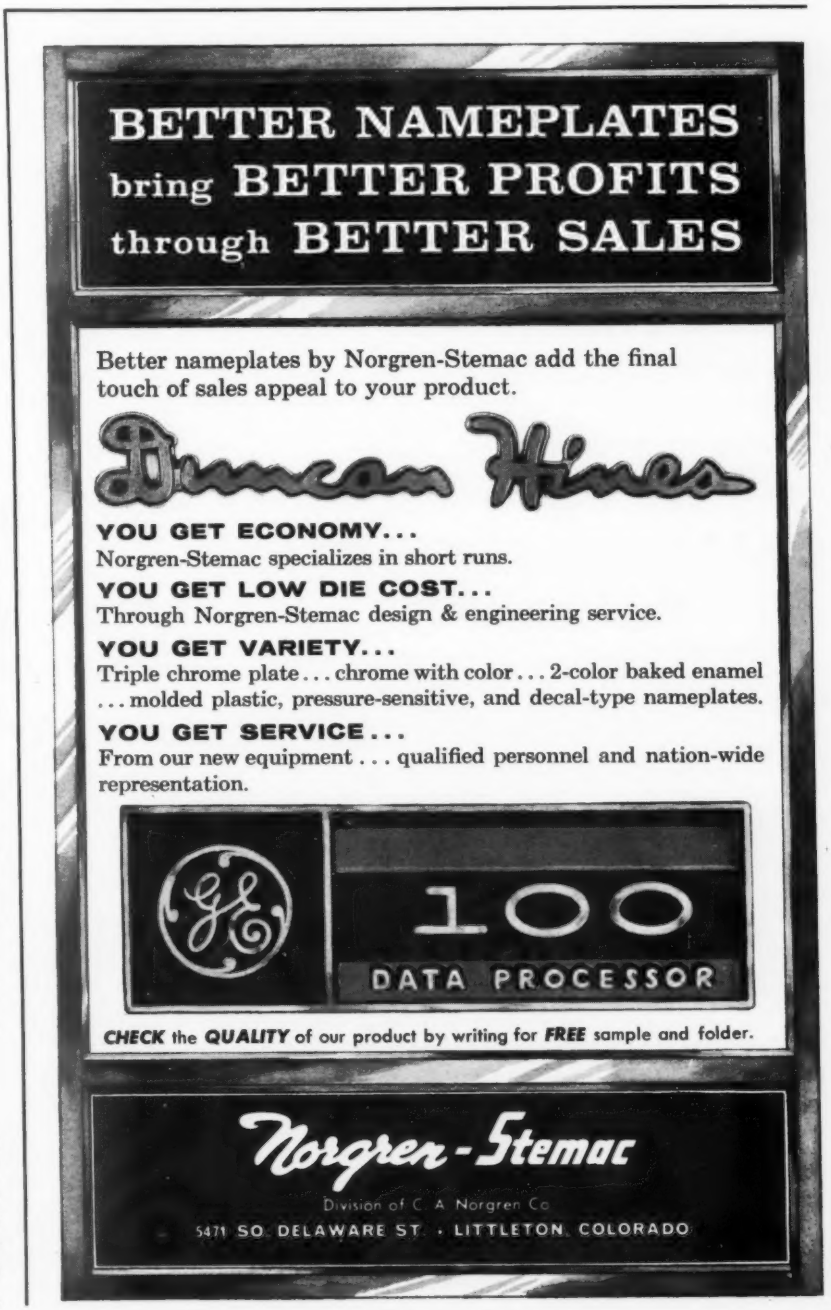
Publication of a two-color catalog describing a line of welding cups and nozzles has been announced. The four-page bulletin discusses the reasons for the use of high alumina ceramics in the manufacture of welding shields. It also illustrates their physical properties, heat resistant qualities, strength characteristics, and welding operation. For a copy of the catalog, write to Dept. MPM, Diamonite Products Mfg. Co., Shreve, Ohio.

## Polyethylene Wire Covering

A technical data bulletin outlines the benefits inherent in polyethylene for line wire covering. The first of two tables in the bulletin presents average mechanical properties such as tensile strength, tear resistance, and abrasion resistance for polyethylene and neoprene. Copies of the bulletin may be obtained from Dept. MPM, U.S. Industrial Chemicals Co., 99 Park Ave., New York 16, N.Y.

## Finishes Bulletin

Three illustrated, four-page bulletins are offered by this manufacturer. One bulletin describes a non-flammable, water-base baking finish that is said to combine both brilliance and color. Another bulletin shows a one-coat textured finish that is claimed to have consistency of pattern and high adhesion. The third bulletin describes a baking finish that has high chemical resistance



BETTER NAMEPLATES
bring BETTER PROFITS
through BETTER SALES
Better nameplates by Norgren-Stemac add the final touch of sales appeal to your product.
Duncan Hines
YOU GET ECONOMY...
Norgren-Stemac specializes in short runs.
YOU GET LOW DIE COST...
Through Norgren-Stemac design & engineering service.
YOU GET VARIETY...
Triple chrome plate... chrome with color... 2-color baked enamel ... molded plastic, pressure-sensitive, and decal-type nameplates.
YOU GET SERVICE...
From our new equipment... qualified personnel and nation-wide representation.
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DATA PROCESSOR
CHECK the QUALITY of our product by writing for FREE sample and folder.
Norgren-Stemac
Division of C. A. Norgren Co.
5471 SO. DELAWARE ST. · LITTLETON, COLORADO

and is available in a variety of colors. For the bulletins, write Dept. MPM, Universal Paint & Varnish Co., Bedford, Ohio.

### Optical Strain Gage

An eight-page bulletin describes the optical strain gage, an instrument designed to measure strains due to tension and compression on metals at temperatures up to 1500° F. The bulletin contains operating information plus applications. Measurements may be obtained on both vibrating and non-vibrating specimens. The bulletin is free upon request to Dept. MPM, American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.

### Aluminum Alloys Brochure

A technical brochure outlining the various properties of aluminum alloys in pig, ingot, and billet forms has been made available. The eight-page booklet compares the properties and specifications of aluminum alloys and discusses the utilization of the various alloys in different types of casting methods. Copies of the brochure are available from Dept. MPM, Henning Brothers & Smith, Inc., 91-127 Scott Ave., Brooklyn, N.Y.

### Grinding, Polishing Units

An 8½ by 11-inch, illustrated, eight-page brochure describes a line of units for grinding and polishing coils, blanks, and sheets in all materials. The brochure also discusses features of the units and gives detailed engineering specifications, plus the combinations and variations of the units. To obtain the brochure, write Dept. MPM, Murray-Way Corp., P.O. Box 180, Birmingham, Mich.

### Spray Gun Catalog

A condensed and simplified catalog sheet covering spray guns for die lubrication is available. Included are specially-designed automatic guns for applying lubricating oils or drawing compounds to dies, or all types of coolants to abrasive wheels and to belts. The spray pattern is adjustable from a fine, round shape to a broad fan. To obtain the catalog sheet, write to Dept. MPM, The DeVilbiss Co., Toledo, Ohio.

### Welding Equipment Manual

A 40-page manual features a full line of gas welding, cutting, and allied equipment. Illustrations show equipment in proper size relation. The manual also carries charts and technical data on the various items and a section is devoted to flow capacity curves for the company's line of gas pressure regulators. Copies are available from Dept. MPM, Smith Welding Equipment Corp., 2633 Fourth St., S.E., Minneapolis 14, Minn.

### Bulletin On New Line Of Resistance Seam Welders

An all-new trim-line of seam welders is covered in bulletin S-59 offered by this manufacturer. In color, this illustrated brochure gives complete description and specifications covering the three available stock sizes, ranging in capacity from 50 to 400 kva. For a copy, write to Dept. MPM, The Federal Machine & Welder Co., Warren, Ohio.

### Epoxy Resins Story

The full story on epoxy resin coatings is told in a booklet entitled, "Planning to Paint a Pyramid?" The high abrasion and chemical resistance qualities is said to make this an ideal all-purpose industrial coating. Write to Dept. MPM, Shell Chemical Corp., 50 W. 50th St., New York 20, N.Y.

### 52-Page Thermocouple Catalog

The newly-revised, fully-illustrated


NEW GAUGE MEASURES

**WELDING ELECTRODE PRESSURE**

with only 5/8" between load points

This new Instrument Control pressure gauge measures up to 2500 pounds for checking electrode pressure on resistance welders.

Construction is particularly rugged to stand up under heavy service and rough use in general shop and factory work. The gauge has no intricate linkages to get out of order, and the dial indicator is quickly and easily zero-adjusted.

Because the gauge is only 5/8" thick between load application points, it is ideally suited to such measuring jobs as checking electrode pressure on welding equipment and other difficult measurements. In multiple gun press welders, several load cells can be set in position and pressures read with only a single dial indicator.

5/8"

The Instrument Control Pressure Gauge finds many other applications in industrial plants for setup and maintenance of any type of mechanical or hydraulic machinery, where accurately-adjusted force is an important factor in the proper operation of the machinery.

$110.00 plus postage

Write for complete details!

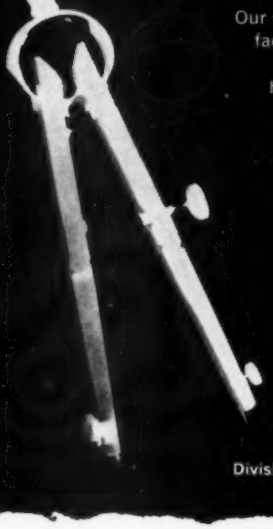
INSTRUMENT CONTROL COMPANY

1554 NICOLLET AVENUE, MINNEAPOLIS 3, MINNESOTA



DON'T BUY SUB-FRACTIONAL H.P. ELECTRIC MOTORS UNTIL YOU CHECK WITH

**SpeedWay**



Our modern manufacturing facilities and engineering know-how has saved hundreds of companies thousands of dollars annually. We want to work with you—for you—to design the quality motors you require and at your price. Write, wire or call for complete catalog.

Thor SpeedMotors

SpeedWay Mfg. Co.
Division of Thor Power Tool Co.
LaGrange Park, Ill.

Catalog EN-S2 offers complete information about a full line of thermocouples and thermocouple components and accessories. This publication lists and describes standard assemblies in protecting tubes and wells for general applications; specialized thermocouples and assemblies for laboratory and industrial applications; and an extensive line of bare and insulated thermocouple wires, replacement elements, ceramic insulators, metal and ceramic protecting tubes, wells, terminal heads and extension leadwires. The catalog is available on request to Dept. MPM, Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa.

### Textured Metal Catalog

A 65-page catalog describes textured metal for stoves. Over 60 patterns, including one of satin and bright stardust, are offered by the manufacturer, who has just moved to a new eight and one-half-acre facility. The metal is available in all standard anodized, lacquered, painted, and plated finishes. It is said to be highly workable, easy to clean, and scratch resistant. For a copy of the catalog, write to Dept. MPM, Croname, Inc., 6255 Howard St., Chicago 48, Ill.

### Book On Machining With Cutting Fluids

"Metal Machining With Cutting Fluids," a 120-page book, collects and summarizes the pertinent basic facts on machining and the application of the proper cutting fluid. The book is intended as a reference source in machine shops. One page is devoted to development of cutting fluids and another to proper cutting fluid selection. The remainder of the book deals with basic machining factors, including the material, the operation, and the tools necessary. A variety of illustrations plus an appendix of valuable tables are included in the book. To obtain a copy of the book, write to Dept. MPM, Gulf Oil Corp., Gulf Bldg., Pittsburgh 30, Pa.

### Metal Stampings Design Book

Parties interested in the production of articles made of die-produced components will be interested in a book entitled "Practical Design of Sheet Metal Stampings." Written by Federico Strasser, partner in one of the leading electrical parts producing firms in Santiago, Chile, the book is designed as a reference for practicing mechanical engineers, draftsmen, and engineering students. The book is divided into three parts: basic processes and outline for design; details of stamping design; and special problems in metal stamping.

# Electronic testing of tubing cuts costs, improves quality

*by R. J. Hasselbring* • INDUSTRIAL HEATING DEPT., GENERAL ELECTRIC CO.

PROBLEM: How to economically inspect tubing 100 per cent for flaws.

We use considerable copper, stainless steel, incoloy, inconel, and steel tubing in a variety of sizes for electric tubular heater sheaths, many of which are used in major appliances. Our manufacturing process involves cold working the tubing to compact the insulation inside the heater. Flaws in tubing usually open into splits in the heater sheath during this cold working process, or during the subsequent forming processes. By the time the flaw is discovered at the end of the process, much costly labor and material have been added.

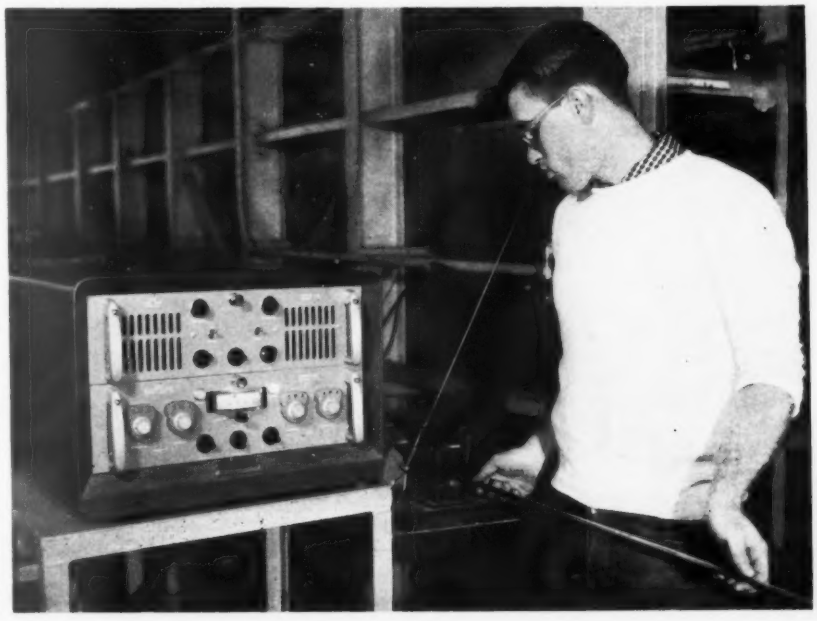
SOLUTION: We applied an instrument which utilizes eddy currents to detect flaws in metals. The unit is plugged into a 110 volt line and turned on. Dials are set by the operator to predetermined settings for the type of tubing being tested. The tubing is fed through a sensing coil, and signals generated by flaws cause lights to flash, horns to "bleep," and a marker to dab red ink on the tube in the defective area.

Dial settings regulate sensitivity and permit the operator to select the type of defects he wishes to detect. Calibration is accomplished by running an acceptable piece of tubing through the coils and then decreasing the sensitivity until tubing containing undesirable defects sets off the alarms. Tubing can be tested at rates up to 200 feet per minute.

Servicing is simple. Primary components of the instrument are printed transistor circuit boards, which are readily removed. Each board is responsible for a definite function, so it is easy to tell which circuit board is defective in case of trouble. The defective board is replaced within a matter of hours on an exchange service plan guaranteed for one year.

RESULTS: We have used the electronic unit to check tubing which we purchase from outside vendors, as well as tubing we produce ourselves. We immediately found tubing in our stock with flaws of a serious nature. The quality level of the tubing went up and inspection costs, manufacturing losses, and customer complaints dropped.

*Operator is checking incoming vendor tubing with self-transport mechanism. Only facility required for this portable flaw detector is 110-volt electrical outlet.*



## INDUSTRY PERSONALS

**Metal & Thermit Corp.'s Organic Coating Division** has announced the appointment of **Allen D. Russell** as organic coatings sales engineer, according to D. W. Oakley, general manager of the division. Russell will be assigned to national accounts in the home appliance industry and will be headquartered in Louisville, Ky.

Prior to his association with M & T, Russell, a specialist in the vinyl dispersion industry, served as district manager for Michigan Chrome & Chemical Co., devoting much of his time to plastisol and organosol coatings.

**Emerson Electric Mfg. Co.'s** president, Wallace R. Persons, has announced that three of the company's top executives have been elected as advisory members of the board of directors. They include **Edward L. O'Neill,** vice president and general sales manager; **William L. Davis, Jr.,** vice president of engineering; and **Charles G. Gulledge,** vice president of electronics and avionics.

**General Electric** has announced the appointment of **R. F. Paling** as sales engineer, according to W. L. Moorhead, manager-residential control sales. Paling will be responsible for the sale of heating controls to original heating equipment manufacturers. His principle territory will be in the East.

**Casting Engineers,** a division of Consolidated Foundries & Mfg. Corp., Chicago, and producers of miniature investment castings, has named **Joseph H. Cadieux** as president, according to an announcement by R. D. Colburn, Consolidated president.

**Presstite Div., American-Marietta Co.,** has announced the appointment of **A. H. Reando** as manager of refrigeration sales, according to J. R. Moore, vice president in charge of sales. Reando served as supervisor in the Presstite quality control laboratory prior to joining the sales department.

**Alloy Surfaces Co.,** Wilmington, Del., licensors of a process for chromizing carbon steel, has announced the election of **Jerome V. Bell** as vice president. Bell joined the company in 1957 as chief engineer.

**A. O. Smith's Electric Motor Division,** Tipp City, Ohio, has named **R. E. Axthelm** supervisor of application engineering, according to C. M. Poston, divisional general manager.

**Kelvinator** has named **Herschel F. Powell** as director of appliance engineering and research, according to an announcement by B. A. Chapman, executive vice president and general manager. Powell was made chief engineer for all Kelvinator products last year. Prior to joining the company in 1955, he was with Gibson Refrigerator Co., Greenville, Mich., where he was assistant manager of engineering and had been engaged in research engineering with Frigidaire in Dayton, Ohio.

**Pemco Corp.** has obtained the services of **Dr. E. E. Mueller,** formerly associate professor of ceramic engineering at the University of Washington School of Mineral Engineering. His primary function will be research on the application of ceramic materials to new markets. Prior to his appointment at the University of Washington in 1953, Dr. Mueller was an instructor at the School of Ceramics at Rutgers University.

POWELL

MUELLER

**Norge Division, Borg-Warner Corp.,** has appointed **Thomas J. McSweeney** as manager of the newly-formed data processing, systems, and procedures department. John Park, Norge vice president and treasurer, said the appointment marked the first step in a record-keeping modernization plan.

**Fulton Foundry & Machine Co.,** one of Cleveland's oldest jobbing foundries, has announced the appointment of **John N. Davenport** as president and **Edward Burkholder** as vice president and sales manager.

**General Electric Co.'s Television Receiver Dept.** has announced the appointment of **Frederic O. Spaid** to the post of manager of materials, according to Franklin Greene, Jr., manager of manufacturing at the Syracuse, N.Y. department.

**Admiral Corp.,** through Carl E. Lantz, vice president-sales, has announced the promotion of **Clarence B. Flinn,** formerly regional sales manager in the Southwest, to the newly-created position of assistant product manager, Electronics Div. Previous to joining Admiral, Flinn was associated with the Wedgewood Div. of Rheem Mfg. Co., and with the Americans Kitchens Div. of AVCO.

**W. W. Sly Mfg. Co.,** Cleveland, has appointed **John J. Finnerty** as Chicago sales representative. The company manufactures dust control systems, industrial ovens, blast cleaning equipment, and tumbling mills.

**Patterson Foundry & Machine Co.'s John N. Lewis** has been named manager of the Detroit district sales office, replacing **A. T. Jacobsen,** who was recently named general sales manager.

**Stran-Steel Corp.'s** president, L. B. Homer, has announced the appointment of **M. M. Anderson** as vice president-engineering. He will have full responsibility for Stran-Steel's product development and all other engineering functions.

**Sherwin-Williams Co.** has announced the appointment of **E. Colin Baldwin** as vice president and general manager, according to Arthur W. Steudel, president of the paint and chemical concern. He will make his headquarters at the company's international headquarters in Cleveland.

**The Harco Corp.** has announced the appointment of **F. A. Redman** to the newly-created position of special projects engineer for the company's Cathodic Protection Division. In his new position, Redman will be responsible for standardizing Harco's manufactured products, production methods, and installation techniques, according to President H. W. Hosford, Jr.

**Tranter Mfg., Inc.,** Lansing, Mich., manufacturer of truck refrigeration systems and heat transfer units, has named **Stanley R. Curtis** as project engineer. The announcement was made by C. C. Smith, chief engineer.

**Adelphi Paint & Color Works,** Ozone Park, N.Y., has announced the promotion of **Herbert Hirschkorn** to assistant to the president and member of the board of directors. Ben Einhorn, president, stated that Hirschkorn will direct the company's sales, advertising, and marketing activities. Hirschkorn formerly managed Adelphi's Industrial Div.

**The Maytag Co.** has promoted **Ed Rapier** to a staff marketing assistant. His first assignment will be as a freezer sales specialist in the appliance firm's Richmond branch and parts of the Newark and Pittsburgh branches.

**SKF Industries, Inc.** has announced

that **Bruce M. Smith** has been appointed chief industrial engineer for the ball and roller bearing manufacturer. The announcement was made by Karl Kesselring, vice president, manufacturing division.

**Linde Co.**, a division of Union Carbide Corp., has named **Sidney Wade** as vice president-distributor products, according to William B. Nicholson, president. In 1956, Wade was named manager of the gas apparatus department and two years later was appointed manager-distributor products, for Linde.

**Cowles Chemical Co.**, Cleveland, has announced the appointment of **Robert E. Sauter** as technical sales representative in Southern Illinois and Missouri.

**Latrobe Steel Co.'s Marshall Schober**, assistant to the vice president in charge of sales, has been named manager of marketing. Latrobe is a major producer of tool, die, and specialty steels.

**Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co.**, has named **Argo G. Pison** as manager of quality control, according to an announcement by A. D. Rapuano, general manager of the division and vice president of the parent company.

**The Hanson-Whitney Co.**, Hartford, Conn., manufacturers of threading taps, gages, gear hobs, and cutting tools, has announced the election of **Brenniss G. Tyrrell** as executive vice president and **Oliver B. Ellsworth** as chairman of the board of directors.

**Sylvania Electric Products Inc.** has elected **Henry Lehne** as a senior vice president, according to President Robert E. Lewis. Lehne will have overall responsibility for Sylvania Electronic Systems, a major division of the company.

**Sharon Steel Corp.'s** president, A. M. Tredwell, Jr., has announced the appointment of **Dr. Dillon Evers** to the management committee as consulting metallurgical engineer.

**Airline Welding and Engineering**, Hawthorne, Calif., has appointed **Ed Bartz** as sales manager, according to an announcement by B. R. Russell, president. He will be in charge of sales of longitudinal and circumferential weld positioners, roll planishing equipment, rotating positioners, and ram manipulators.

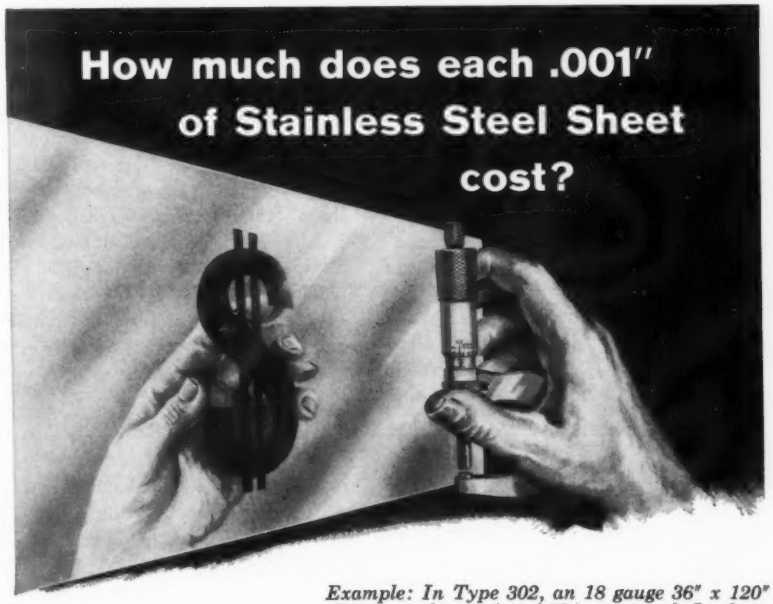
**Roto-Finish Co.**, Kalamazoo, Mich., recently announced the appointment of **John R. Strom** as chemist and process engineer for the company, according to Gunther W. Balz, president. Strom served as process engineer for Brown-Lipe-Chapin Div., General Motors, and as plating superintendent for the Eljer Co., Marysville, Ohio.

**The Electric Auto-Lite Co.** has further implemented its expanded original equipment and sales research activities with the appointment of **Carl P. Cronk** to the newly-created post of manager, market research.

**The Patterson Foundry & Machine Co.** has named **Reed W. Campbell** as chief engineer. Previously, he had been product manager in charge of the company's reaction vessels and processing systems. Patterson, a division of Ferro Corp., manufactures equipment for the chemical, paint, and ceramic industries.

**U.S. Industries, Inc.'s Clearing Div.** has appointed **Kenneth Bradley** as west coast regional sales manager. The announcement was made by Paul N. Stanton, manager of the Clearing Machine Tool Div.

**Lucifer Furnaces, Inc.'s** president, Clement Dinon, has announced the ap-


*Example: In Type 302, an 18 gauge 36" x 120" sheet has a base price of 52¢ per pound. In sheets of this size, each .001" of thickness weighs 1.26 pounds per sheet. Thus, each .001" of unnecessary thickness costs you at least 65.5¢ more per sheet.*

On the surface this may seem insignificant, but it has a marked effect on the total price you pay for a given quantity of stainless steel sheet. With cost a factor, this can be important since stainless steel is purchased by weight.

Using the above example, a mere .001" of unnecessary thickness costs you $20.76 more per ton. If you figure the maximum allowable gauge thickness variation of plus or minus (10%), you can readily see that the price you pay for overall sheet thickness could involve much needless cost.

Washington Steel has the equipment and the experience to produce MICRO-ROLD stainless steel to tolerances much closer than standard industry tolerances. Usually money can be saved by first selecting the minimum gauge that will serve the requirements of the application, and then specifying that the thickness be rolled to the light side of the gauge range. This specification involves no cost extra and is standard practice at Washington Steel. (If exact close tolerances must be guaranteed, there is a nominal additional charge.)

*Consult your nearest MicroRold Stainless Steel Distributor. He will gladly show you how to save money on your stainless steel purchases.*

**Washington Steel Corporation**

11-G Woodland & Griffith Avenues

Washington, Pa.

pointment of **John J. Shingle** to the position of chief engineer.

**Norge Div., Borg-Warner Corp.,** has appointed **Edward B. Kate** as wringer washer sales manager. He will direct the national sale of this appliance, according to James Ruff, director of sales planning. Kate was promoted from the position of district manager for Missouri and Kansas.

**Kelvinator** has appointed **Craig Hitchcock** as chief inspector at its Grand Rapids, Mich. plant, according to George Beld, works manager. Hitchcock joined the company's product engineering department in 1948 and for the past several years has served as assistant manager of product engineering.

**Avco Corp.'s Crosley Division,** Cincinnati, Ohio, has announced the appointment of **John B. Wood** as design engineer. He was formerly with the General Electric Co., Cincinnati.

**Union Die Casting Co.,** Whittier, Calif., has appointed **John E. Grimshaw** as plant superintendent, according to E. D. White, vice president. Grimshaw was formerly associated with Phillips Mfg. Co. as plant manager and chief engineer. He has also worked as general manager for Zenith Die Casting, Inc., and as vice president of manufacturing for Duro Fittings Co. He will supervise production of the company's three divisions: Custom Die Casting, Consumer Products, and Plumbing and Hardware.

**Rockwell-Standard Corp., Stamping Division,** Utica, N.Y., has appointed **James A. Leake** as sales manager. Leake has had more than 20 years manufacturing and sales experience in the job stamping business. His trade and technical association activity has included: district officer and national director of Pressed Metal Institute; Society of Automotive Engineers; and American Ordnance Assn.

**Kelvinator** has announced changes in traffic management at Detroit and Grand Rapids, Mich. **Donald B. Gill,** traffic manager in Detroit for the past three years, has been promoted to divisional traffic manager at the company's appliance manufacturing plant in Grand Rapids, succeeding Carl Zeman.

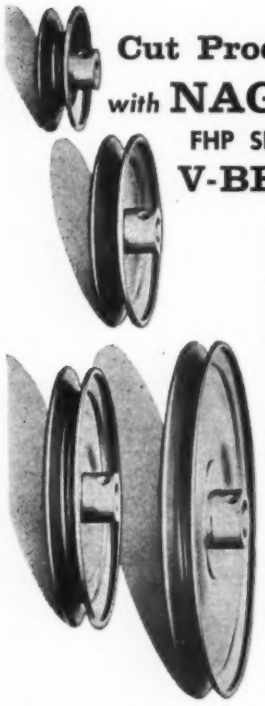
**Richard J. Caroselli,** formerly assistant traffic manager for Bohn Aluminum & Brass Corp., Detroit, has been named traffic supervisor, replacing Gill at Detroit.

**Wheelabrator Corp.,** Mishawaka, Ind., manufacturer of airless blast cleaning equipment, dust control equipment, and steel abrasives, has announced two new executive appointments. **Elmer A. Rich,** formerly general sales manager, has been named vice president and general manager of Lake Erie Machinery Corp., a newly-acquired subsidiary.

**George O. Pfaff** has been named director of marketing, according to an announcement by J. F. Connaughton, president. Pfaff will be responsible for marketing Wheelabrator's general products and Techline Div. equipment and supplies.

**The Cal-Dak Co.'s** president, Lloyd C. Nelson, has named **R. E. Eggert** as vice president in charge of metal factory operations. Eggert was formerly manager of the company's Colton, Calif. plant. He will report to Frank J. Walsh, executive vice president of all Cal-Dak manufacturing operations.

**Hussmann Refrigerator Co.** has announced the selection of **Parker V. Phillips** as manager of the Engineering department, according to W. A. Vormehr, Jr., vice president-manufacturing. With Hussmann, Phillips has held the positions of field service engineer and serv-

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- Light weight design
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- 2.4" to 12" P.D.
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**AIR REEL**

**NEW,** low-cost GRACO Air Hose Reel has three-way utility to save time and effort in using air-powered hand tools! Runs free . . . stops at 9 in. intervals . . . or adjusts to balance the tool. Only 12 in. high, 10 in. deep, 5 in. wide . . . it's a money-saving midget! Bolts to wall, post or ceiling . . . includes 15 ft., ¼ in. ID air hose. Gives you more *working* freedom . . . *investigate today!*

**RUNS FREE!** Allows free-wheeling work within 15 ft. radius. Spring pick-up gives effortless hose retraction.

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**BALANCES!** Spring tension on hose pickup easily adjusts to counter-balance weight of the tool. Saves muscle power!

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*(See Phone Book Yellow Pages, Spraying, for Local Graco Suppliers)*

ice manager for Hussmann's Canadian subsidiary.

**Deutsch Controls Corp.**, Los Angeles, has announced the appointment of **Morris P. Stillinger,** 20-year veteran executive of the company, as national sales manager, according to Lester Deutsch, president. Stillinger will headquarter at 14504 S. Figueroa, Los Angeles. The company manufactures water-heater thermostats and other gas appliance controls.

**Whirlpool Corp.** has recently announced two new appointments. **Dr. W. Gale Cutler** has been made manager of mechanical engineering research at the Whirlpool Research Laboratories, according to Gerhard Stoll, director of research. **Leslie V. French** has been promoted to the position of director of engineering services, according to William E. Mahaffay, vice president of the company.

## What About Foam Insulation in the Appliance Field

A recent survey conducted by MPM would indicate that foam insulation is making rapid progress in the appliance industry. Ten of fourteen manufacturers contacted are currently using foam insulation, for one or more products, and it was indicated that two of the four manufacturers who are not currently using foam insulation are planning on using it in 1960. Foam insulation is being used in the production of such products as freezers, commercial refrigerators, domestic refrigerators, commercial display cases, ice cream cabinets, and combustion washer-dryers.

The majority of the companies contacted are currently using prefabricated foam parts for insulation. Several are, however, presently using "foam-in-place," and others are in the process of investigating this method.

# Ground rules for creative approach in design engineering

A LIST OF SIX GROUND RULES for a creative approach in design engineering has been suggested by William M. Goldsmith, executive vice president of Dave Chapman, Inc. Industrial Design, Chicago, and currently chairman of the board of directors, American Society of Industrial Designers. He emphasizes that there are other vital ingredients involved in assuring the effective progress through creative research and design. For example, he says that establishing a positive attitude toward the use of creative skills is the first step toward positive progress.

"I offer the following list which we as designers have drawn up as ground rules in our office to try to achieve optimum results from any design program effort. I believe the list will serve effectively, as well, in tangent fields of creative studies in marketing, advertising, engineering, etc."

*First:* Make the product or the service satisfy *people* — the consumer and his way of life — not *things or a situation* or a pat formula of pricing or production efficiency.

*Second:* Take a broad look at many markets — the collective demands of all consumers — not just the market you are dealing in; look at the marketing framework, its long-range potential as well as its past, present, and even immediate future.

*Third:* Keep an eye on your competitor *but don't let this omnipresent factor exert too much influence;* don't allow "me, too-ism" to replace creative management and research leadership.

*Fourth:* Stop searching out all the reasons a proposed design or research program can't be an action plan; spend your energies finding out how it *can* achieve reality.

*Fifth:* Extend design and research functions farther into the future; don't restrict them to a technical service to solve today's crash-rush-got-to-have-it-ready-for-the-June-market problems.

*Sixth:* Establish within your organization the attitudes and organizational structure that are able to utilize and complement the results of creative study in any area. If good ideas and programs bog down in an understaffed engineering department and never see the light of realization until it's too late — we might as well skip the design and research activity in the first place. Or, if a resistive sales department scuttles ideas and plans because they didn't think of them first, we're being equally wasteful of creative efforts. Bring all creative and management personnel into the planning picture at an early stage so that all work together toward jointly-determined goals.


**HUYCK** *FURNISHES FIREBRICK MASONRY TO BUILD, REBUILD AND REPAIR ALL TYPES OF: ENAMELING FURNACES . . . FRIT SMELTERS . . . ALUMINUM, BRASS, LEAD SMELTERS . . . FORGE FURNACES . . . HEAT TREATING FURNACES.*

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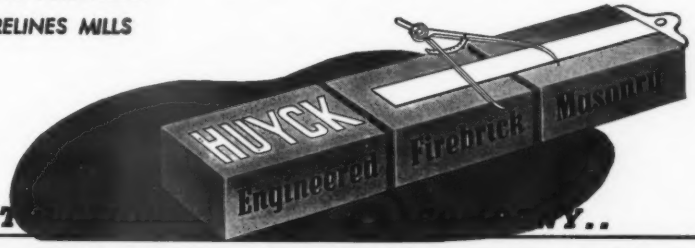


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## PEI meeting *(Continued from Page 68)*

ferring to the salesman's problems in relation to purchasing, he said, "Walk into any business, into any lobby of any big company, and you will find a sign that says your salesmen can only call on them four hours a day, four days a week. We tore these signs down at General Steel Wares and told the purchasing agents the salesmen could call *any time.*

"It placed salesmanship number one in the company," Randall continued. "Everything else was necessary, but without sales, you don't have a company. You don't need to go to your banker. You don't need any five year plan. If you don't sell today, you're not going to be here tomorrow."

Himself a very enthusiastic individual, Randall touched on enthusiasm before closing. He said, "If we are going to operate a profitable company, we must leave no doubt in anyone's mind—employees, customers, or competitors—that there is a real need for our company's services and our company's products. *The leader must at all times be enthusiastic.*"

"Ask him for the order," was an urgent suggestion of this speaker. He said, "Be sure your salesman asks for the order. The least a salesman can do is extend the invitation to buy. The least any executive responsible for his company's success can do is extend the invitation to everyone on the payroll to get on the team. Don't take it for granted that they are. You may get a shock."

### Plus-selling — for profit

A plus-salesman, according to Randall, or a plus-executive, requires four simple attitudes in the plus-selling of a product: (1) The ability to coordinate his time and talents, not dissipate them; (2) the sincere belief that his products or service will be of lasting benefit to the buyer; (3) the courage to do what his employees and prospects expect him to do — ask for the order today, not tomorrow; and (4) the graciousness to reciprocate the confidence placed in him by serving well. "That," he said, "is selling for plus profits. It's simple; it's old-fashioned; but it's very, very effective."

### Officers for 1960

Elections of officers and trustees of the Porcelain Enamel Institute for the coming year were announced as follows:

The president, Robert N. Smith, Temco, Inc., Nashville, Tenn., continues in office, having a year to serve of his two-year term.

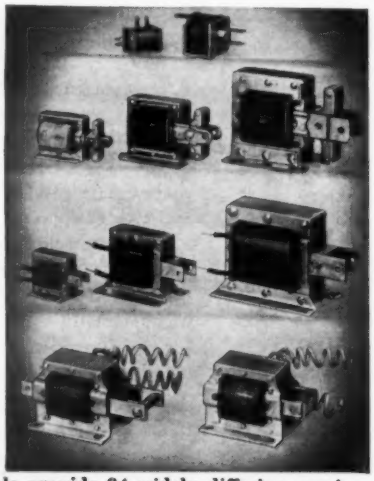
Vice presidents elected were: J. F. Corkill, U. S. Borax & Chemical Corp., New York, N. Y.; H. A. Ringelberg, Challenge Stamping & Porcelain Co., Grand Haven, Mich.; Herbert Turk, Sr., Pemco Corp., Baltimore, Md.; and J. C. Winget, Armco Steel Corp., Middletown, O.

G. A. Hutt, Ferro Corp., Cleveland, O., was again named immediate past president. P. B. McBride, Porcelain Metals Corp., Louisville, Ky., was re-elected treasurer; and John C. Oliver, Porcelain Enamel Institute, was re-elected secretary and managing director. J. W. Vicary, Ervite Corp., Erie, Pa., was elected chairman of the board of trustees.

## Ceramic coating *(Continued from Page 48)*

protect the heat exchangers and flue systems from thermal and chemical corrosion. Similar coatings are available for application to automobile mufflers, resonators, and tail pipes to increase their service life. Coatings are also being used to provide electric insulation in motors and controls developed for service at elevated temperatures.


Immediate Delivery on custom quality Stock Solenoids



Seventeen models provide 34 widely differing specifications . . . delivery within 24 hours.

Specifications include: pull and/or push capacities up to 45 lbs. . . . sizes from ¾" x 1⅛" to 3" x 3" . . . stroke lengths fractional to 2".

Double shading coils provide high sealed pull without excessive AC hum. Electrical characteristics are thoroughly uniform. Units are compactly engineered to extremely close tolerances.

Solenoids can be supplied in any quantity from single units to long-run cost-saving production orders.

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Aircraft power plant components have been successfully coated for protection from thermal and intergranular corrosion. These have included such parts as the exhaust systems on reciprocating engines, nozzle boxes, compressor and stator blades on turbo-superchargers and combustion inner liners, transition liners, tail pipes, and the afterburner sections of jet engines.

It has been shown that ceramic coatings protect titanium and its alloys from embrittlement resulting from gas absorption at elevated temperatures. Coatings are also available for most of the other common construction metals including aluminum, iron, low carbon steel, chrome steel, nickel chrome alloys, molybdenum, and zirconium.

### New developments

A recent development which shows considerable promise in the laboratory has been termed a "spall coating." It is designed to protect the metal from oxidation during heat treating. Upon cooling, following the removal of the treated part from the furnace, the coating spalls spontaneously leaving a bright metallic oxide-free surface. This is in actuality a family of coatings necessary to cover the wide variations in metal compositions and heat treating cycles.

Another development based on work at the Bureau of Standards is a means for applying hard surfacing alloys by porcelain enameling techniques rather than by flame spraying. It is relatively expensive and has not been widely used. However, it does have definite possibilities, since the coating not only has good abrasion resistance, but is also resistant to oxidation and chemical corrosion.

Special frits are being tested in coatings used to seal the skin to the honeycomb interiors of structural components for supersonic aircraft.

They have also been found useful in the atomic energy program both in the form of coatings and for shielding purposes. Highly reflective titania opacified coatings used in liquid boron loaded sintillation neutron detectors greatly reduced the time required to obtain total cross section measurement of the elements.

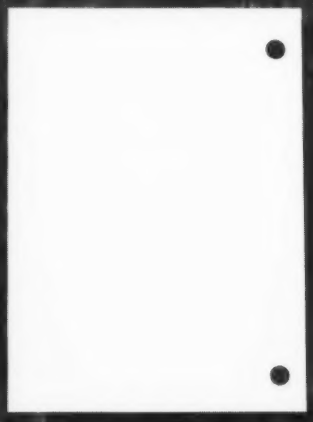
To summarize: Functional inorganic coatings for metals commonly referred to as ceramic coatings have been described in general terms. Specific applications have been listed. New coatings will be developed as additional uses become apparent and the requirements are defined.

# Ferro ONE-COAT Porcelain enamels

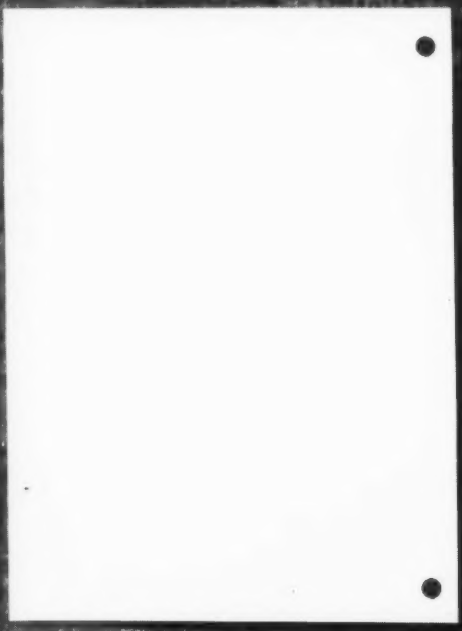
## for "special" and non-premium steels

SPECIAL STEEL "A" (Armco Steel)

SPECIAL STEEL "C" (Inland Tinamel)



SPECIAL STEEL "B" (Bethlehem Steel)



REGULAR COLD-ROLLED, RIMMED STEEL

SPECIAL STEEL "D" (U. S. Steel)

# *What is Best for your products?*

**See and compare** the fine *one-coat* porcelain enamel finishes developed by Ferro over the past ten years. They may be used with a variety of steels, as shown above, each of which has been thoroughly tested if not already in commercial production. While processing techniques may differ, any one of these steels can be used to obtain a high-quality porcelain enamel finish with *one-coat* at substantial savings.

Ferro's most recent process, widely publicized in recent months, makes possible the use of *non-premium* steels for these superior one-coat finishes. This, of course, means lower material costs and wider sources of steel supply.

Whichever base metal *you* may select, you will find Ferro's experience and production-proved products extremely valuable in adapting *one-coat* porcelain enamels to your products, your production facilities. When can we talk to you about it?

FERRO

**FERRO CORPORATION**

4150 East 56th Street · Cleveland 5, Ohio
Nashville 11, Tenn. · Los Angeles 39, Calif.

## Portable Cooler Uses Vinyl-Clad Steel

*One of the first commercial applications of vinyl-coated steel was in the cabinets of Travelaire portable coolers manufactured by Metalaire Products Co., Phoenix, Ariz. They have also used it on this portable cooler, which is available with a built-in heater. Officials of Metalaire report that, for the first quarter of 1959, sales ran 47 per cent ahead of a like period in '58.*

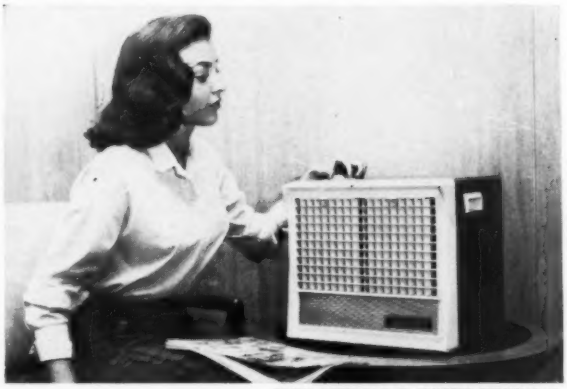


PHOTO COURTESY B. F. GOODRICH CHEMICAL CO.

## Kelvinator Sales Jump 45 Per Cent in August

Kelvinator major appliance sales in August jumped nearly 45 per cent over August of last year, and automatic washers reached their highest monthly volume in the company's history, according to an announcement by H. L. Travis, vice president, sales.

The appliance division of American Motors Corp. has reported significant increases in dealer billings every month this year over the same month a year ago. Refrigerators, a consistent leader along with laundry equipment, were up 50 per cent over August of last year.

## Norge Freezer Factory Sales Up 45 Per Cent In August

Factory sales of Norge home freezers in August were up 45 per cent above the like 1958 month. According to Harold P. Bull, vice president in charge of sales, "This will be by far the biggest freezer year in the history of Norge." He added that, by the end of July, the company had sold more freezers than for all 12 months of 1958. Factory sales of all Norge appliances rose 25 per cent above August of last year.

## Industrial Furnaces Up 176 Per Cent In August

According to the Industrial Heating Equipment Assn., during the month of August industrial furnace manufacturers received orders totaling $9,738,000, up 176 per cent from the August, 1958 volume. Total net orders for industrial furnaces in the first eight months of '59 were $66,924,000, up 153 per cent from the $26,504,000 level attained in the same period of '58.

## Fedders Forms New Department For Central Air Conditioning

A separate department for marketing their line of central air conditioning equipment has been formed by the Fedders Corp., Maspeth, N.Y. Claude C. Kirk has been named national sales manager and John B. Mitchell assistant sales manager of the new Central Residential and Commercial Air Conditioning Dept.

In making the announcement, Salvatore Giordano, president, stated that the rapid growth of the central equipment now warrants a special department to conduct this business. Previously, these units were handled by the Refrigeration Appliances Dept.

## Record Shipment of Ironers

The largest single order of ironers ever shipped to an Ironrite distributor in one day left the Ironrite, Inc. plant in Mt. Clemens, Mich. on Sept. 30. "The order for 906 ironers tops all previous shipments in our 38 years in business," said R. O. Phillips, national sales manager. The order was placed by Anderson Distributing Co., Salt Lake City, Utah.

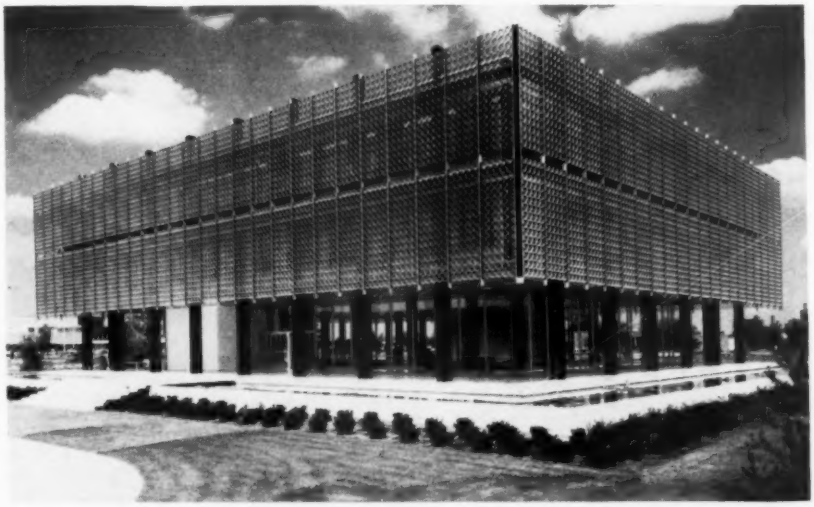
## Caloric Appliance Expands Porcelain Enameling Department

Caloric Appliance Corp. has announced plans to expand its porcelain enameling department, increasing its capacity by 50 per cent. The expansion program will be carried out without interfering with present operations and is expected to be completed during the first half of 1960.

Among the new equipment which will be added are: a 135-foot straight-through furnace; an alarm system with

## Reynolds Opens Aluminum Office Building

A distinctive new aluminum office building in the northland area of Detroit was officially opened by Reynolds Metals Co. as its Great Lakes region sales headquarters. Costing approximately $2,000,000, the building demonstrates the feasibility of aluminum in buildings by using approximately 200,000 pounds of the metal. It was designed by Architect Minoru Yamasaki.



a movable furnace floor; new application lines for dipping and spraying ground coat for lining, ground coat for cover white, and color or white cover coat; an enlarged curtain wall assembly and laminating building; and new loading platforms to handle the large panels.

The new application lines will be equipped with automatic spray equipment and transfer conveyors.

## Speed Queen Announces Expansion, Enters Combo Field

Plans for an estimated $1,000,000-expansion program have been announced by officials of Speed Queen, Ripon, Wis. A factor influencing this decision was that the company would soon enter the combination washer-dryer field. Additional space has already been added to the steel pressroom which will house new presses purchased for the stamping out of parts for the new combo.

Expansion plans are also being carried out at the Speed Queen feeder plants in Omro and Wautoma, Wis. The Omro plant is a die casting works while the Wautoma operation supplies wringers for use on the Ripon assembly lines.

## Westinghouse Forms New Distribution Center

A new product distribution center will be formed in Seattle, Wash., by Westinghouse Electric Corp., it was announced by Walter J. Maytham, Pacific Coast vice president. The center will serve as district headquarters and warehouse for both appliance sales and lamp division products.

## Professor Andrews Speaks In London

A. I. Andrews, head of the University of Illinois Department of Ceramic Engineering, gave the first Mellor Memorial Lecture for the Institute of Vitreous Enamelers in London, England on Sept. 17.

This is the silver jubilee conference and exhibition of the institute of which J. W. Mellor was the first president. Representatives of the enameling industry from all over Europe and North America attended the meeting.

## Frigidaire Introduces Gas Clothes Dryers

Frigidaire is entering the gas dryer field with the introduction of four new automatic models. Herman F. Lehman, Frigidaire's general manager, emphasized that the bulk of the vast dryer market has scarcely been tapped. "Only 15 per cent of U.S. homes have dryers today," he declared.

"Although electric dryers currently outsell gas models by about two to one nationally, there are certain localities where there is a strong demand for gas units," Lehman explained. "Until now, our customers who insisted on gas could not buy a dryer to match the styling of Frigidaire's automatic washer."

The new dryers, only gas appliances offered by the company, are being manufactured in Dayton, Ohio.

## Hendrick Names Representatives

Hendrick Mfg. Co., Carbondale, Pa., manufacturer of perforated metal, has announced the appointment of three new sales offices. Filters Inc., Boston, Mass., will handle sales in the New England area; Frank W. Lynch & Co., Southfield, Mich., will cover the state of Michigan; and Harold Snedeker will handle northern New York state.

## Wichman To Present NEMA Reorganization Plan

W. C. Wichman, vice president of General Electric and general manager of the company's Hotpoint Div., will present a plan for the proposed reorganization of the National Electrical Manufacturers Assn. at NEMA's annual meeting Nov. 11 in Atlantic City, N.J.

The move to change the structure of this electrical manufacturing industry trade association is expected to result in top attendance for the 33rd annual convention. Other features of the business session include a first "illustrated annual report" by NEMA President J. L. Singleton, senior vice president, Allis-Chalmers Mfg. Co.; presentation of the 1960

*to Page 92* →

## Million-Dollar Freezer Shipment Celebrated By Maytag

The largest single home freezer shipment in history, valued at one-million dollars, was celebrated by The Maytag Co. at the Eastern Iowa rail center of Marion on September 30. The 42-car shipment included approximately 2,000 freezers with a total capacity of 1,117,-350 pounds.

Pulling in at 3:30 p.m., the long train was greeted by Claire G. Ely, marketing vice president of Maytag, President William J. Quinn of the Milwaukee Road, and Mayor George Brewer of Marion. Here, the railroad cars were split up, each carrying freezers to various destinations throughout the country. According to Maytag sources, each of the freezers has already been sold as part of a special "boxcar" freezer promotion.

In his talk before the hundreds of citizens gathered at the Marion city park, Ely stated that "With a freezer already in more than one out of every five homes in America, and with industry sales showing nearly a one-third increase in the first six months of this year over the same period a year ago, consumers rapidly are turning to the home freezer as a necessity of modern living. It has become a demand item."

EXCLUSIVE MPM PHOTO

*On hand for the ceremonies commemorating Maytag's million dollar freezer shipment were: (left to right) Engineer W. S. Hunsaker, Claire G. Ely, vice president-marketing for Maytag, President William J. Quinn of the Milwaukee Road, Mayor George Brewer of Marion, Ia., and James T. Hayes, superintendent of the Iowa Division of the Milwaukee Road.*

# FERRO PIONEERS

## new equipment and processes to reduce porcelain enameling costs

Want to use lighter gauge or lower cost metal? Ferro engineers can probably help you do it.

Want to reduce material handling in your whole finishing operation? Ferro engineers can definitely do this.

Want better, more highly mechanized facilities for metal preparation, or storing and handling of the "slip"? Or again, cost-cutting equipment for spraying or dipping? *Ferro engineers have what you need,* have made such installations, and will guarantee that what they recommend will work well for you.

Ferro's Engineering Division pioneered most of the mechanical advances that today make porcelain enameling a high-production, low-unit-cost finishing process. They've been doing this for 38 years, and now have more to offer that's *significantly new* than at any time in their history.

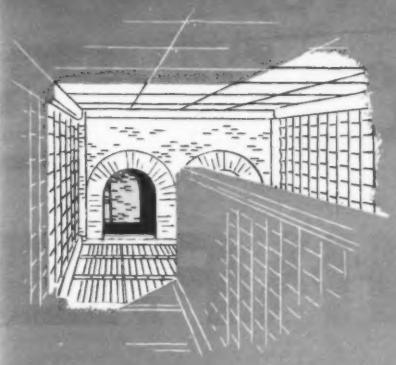
Maintaining satisfactory profits in business usually requires staying a step ahead—or at least even with competition in product quality and costs. If porcelain enameling is involved in the production of your products, we are confident we can help you. Where and when can we talk?

FERRO

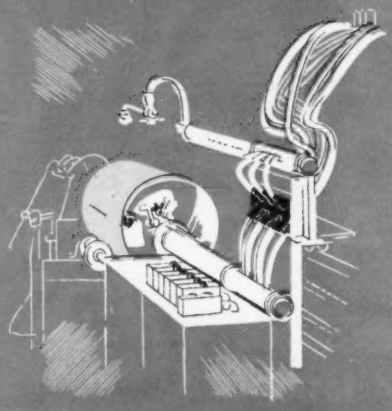
FERRO CORPORATION

*Engineering Division*

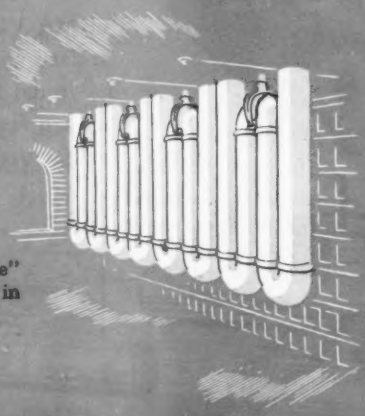
4150 EAST 56th STREET • CLEVELAND 5, OHIO



**FIRST** "U-Type" Continuous Furnace built in 1927, for Enamel Products Co.
... by Ferro

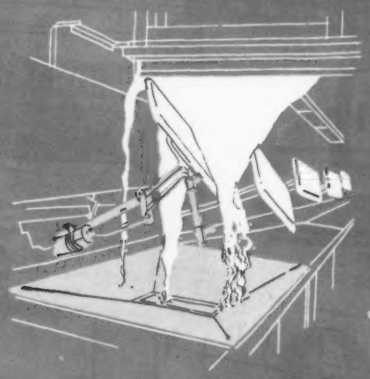


**FIRST** Fully-automatic Spray Equipment for water heaters built in 1955, for Rheem Mfg. Co.
... by Ferro



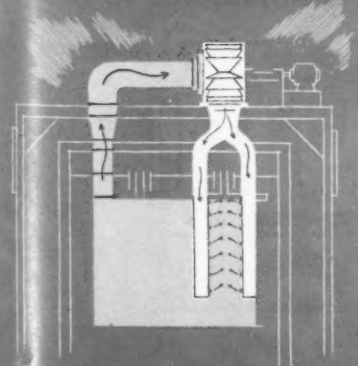
**FIRST** "Radiant-Tube" Continuous Furnace built in 1937, for Newark Stove Co.
... by Ferro

# DID YOU KNOW?

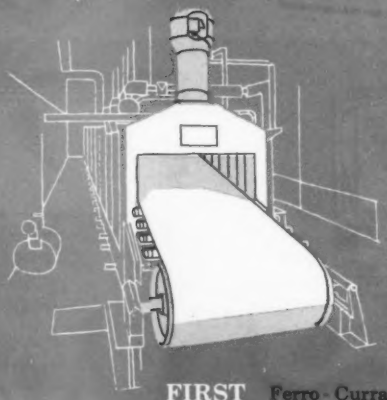


**FIRST** Fully-automatic Flow Coat Machine built in 1955, for General Electric Co.
... by Ferro

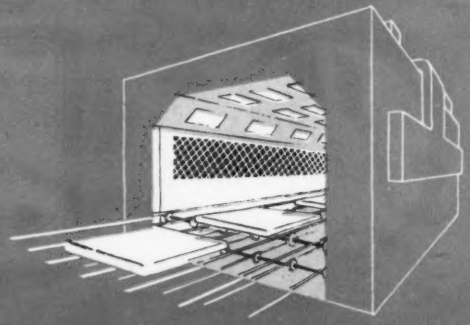
**FIRST** Fully-automatic Spray Equipment for washing machine tubs built in 1956, for Maytag Co.
... by Ferro



**FIRST** Porcelain Enameling Furnace with convected preheat air-current system built in 1956, for Porcelain Steel Corporation
... by Ferro



**FIRST** Ferro-Curran Automatic Spray Pickling Machine built in 1958, for American Radiator & Standard Sanitary Corporation
... by Ferro



**FIRST** Gas-Fired Infra-red Porcelain Enamel Drying Oven built in 1959, for Murray Manufacturing Co.
... by Ferro

Kelvinator
STA. CLARA EDO. DE MEX.

# WORLD-WIDE ACCEPTANCE

## FOR PER

PERMA-VIEW oven door windows are the standard with leading range manufacturers in the United States, from Coast to Coast. Now they are fast becoming standard for leading manufacturers in other countries, too, as these

RADIATION NEW ZEALAND LIMITED

THE Enterprise FOUNDRY COMPANY LIMITED

THE GUELPH STOVE CO. LIMITED
MANUFACTURERS OF
STOVES RANGES AND FURNACES

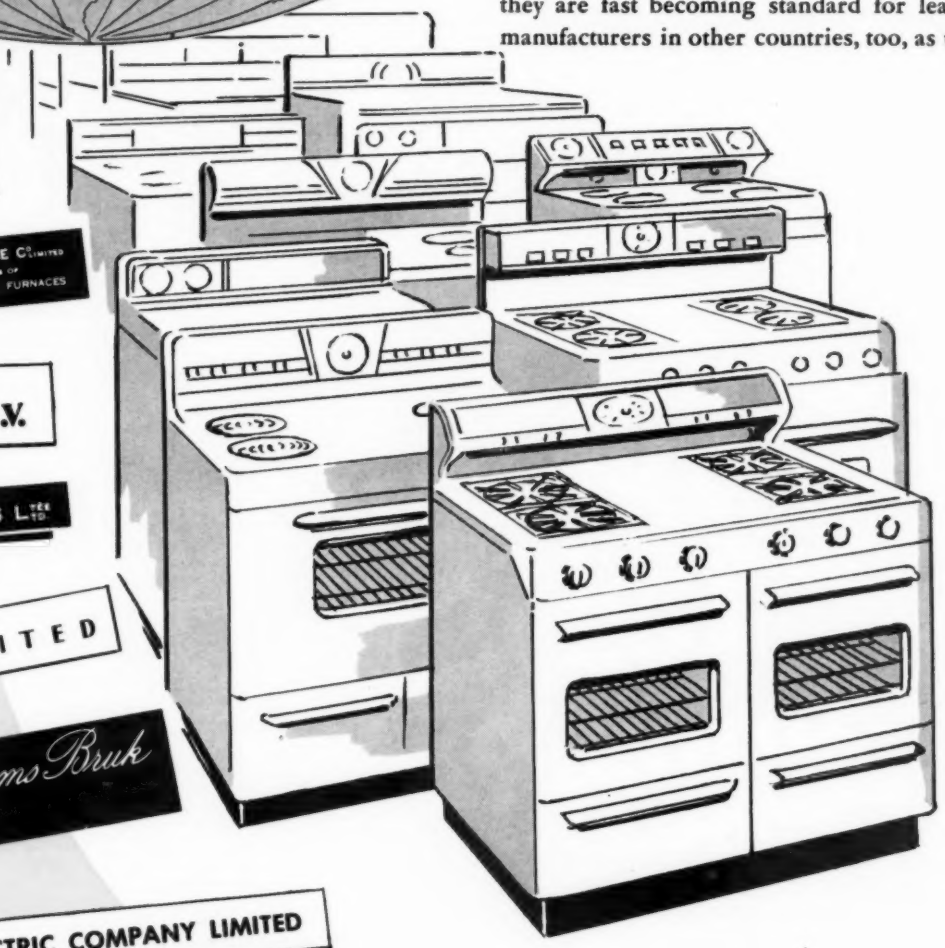
Glasindustrie
Pieterman n.v.

E. ROY INDUSTRIES LTÉE

MOFFATS LIMITED

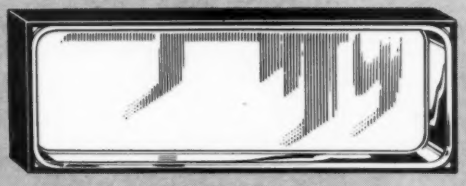
Aktiebolaget Ankarsrums Bruk

CANADIAN GENERAL ELECTRIC COMPANY LIMITED



ROUND

SQUARE



RECTANGULAR

TRAPEZOID

We can manufacture any shape, and size, and thickness to meet your engineering requirements.

DEETNA
BREDA, NETHERLANDS

GENERAL STEEL WARES LIMITED

BRANTFORD WASHING MACHINES LIMITED

# RMA-VIEW

Gurney PRODUCTS LIMITED

Canadian Admiral CORPORATION, LTD.

P. I. Manufacturing, Incorporated

McCORMACK SMYTH LIMITED

SUNSHINE WATERLOO CO. LIMITED
WATERLOO, ONTARIO

manufacturers learn of the sales advantages of the PERMA-VIEW "No-Fog" window. From Canada to Europe—to Australia or South Africa —PERMA-VIEW is recognized as the finest and most economical oven door window.

(The accompanying names and trademarks represent some of the present users outside the United States.)

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." For the homemaker it presents an "invitation to buy."

BEACH Foundry LIMITED

LA FONDERIE DE L'ISLET
LIMITEE
Manufacturiers de
POÊLES • FOURNAISES • LAVEUSES

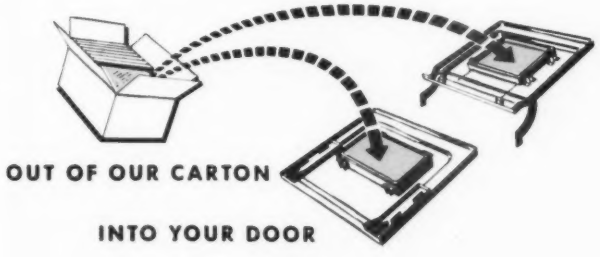
THERMAX LIMITED

The PERMA-VIEW window is pre-engineered, and comes to you ready for immediate installation in your range. "Out of our carton into your door." Let our specialized production lines serve as a part of your sub-assembly facilities. If you do not use a window, if you make your own window, or if you buy your window from another source, we suggest you phone or write us for complete details on the ease and economy of adding this sales feature to your new ranges.

A. BELANGER LIMITED

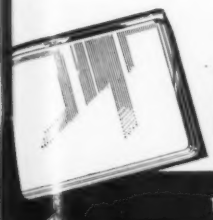
METERFABRIEK
(MAATSCHAPPIJ TER VERVAARDIGING VAN GASMETERS, ENZ.)

Husqvarna Vapenfabriks Aktiebolag
Huskvarna - Sweden




CANADIAN WESTINGHOUSE COMPANY • LIMITED

Alternate methods of attachment may be used.



MILLS PRODUCTS INCORPORATED
1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN

THIS IS A GENUINE PERMA-VIEW PATENTED NON-FOG WINDOW
CLEAR VISION Always!

## Industry news

→ *from Page 87*

program and budget; and nomination and election of new members to the NEMA board of governors.

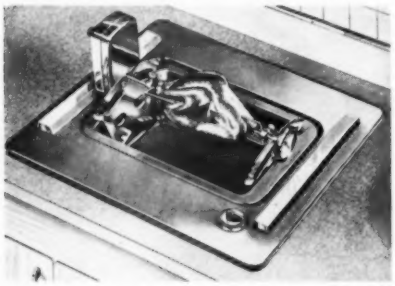
Wichman is chairman of the NEMA Planning committee, which developed the reorganization plan, and Singleton is an ex-officio member of the same committee. Joseph F. Miller, managing director of NEMA, will preside over the reorganization plan presentation.

Other members of the Planning committee are: J. R. MacDonald, chairman of the board and president, General Cable Co., New York, N.Y.; C. H. Bartlett, vice president, Apparatus Products, Westinghouse Electric Corp., Pittsburgh, Pa.; A. A. Berard, president, Ward Leonard Electric Co., Mt. Vernon, N.Y.; R. Stafford Edwards, president, Edwards Co., Inc., Norwalk, Conn.; J. J. Mellon, chief engineer, Allen-Bradley Co., Milwaukee, Wis.; D. J. O'Conor, Jr., president and general manager, Formica Corp., Cincinnati, Ohio; and F. H. Roby, executive vice president, Federal Pacific Electric Co., Newark, N.J.

The association's annual reception and dinner are scheduled for Nov. 11 and the annual general luncheon is scheduled for Nov. 12. Newly-elected officers will be presented at the luncheon.

### Roper Boosts Production On Built-In Gas Unit

According to E. Carl Sorby, vice president of Geo. D. Roper Sales Corp., Kankakee, Ill., the success of the company's built-in "Rotis-O-Grill," a combination rotisserie-broiler-griddle, has



necessitated a step-up in volume production. "It has made a tremendous hit," Sorby explained, "largely because it's the first built-in gas surface unit offering a rotisserie." He said the production decision was made following nationwide trend indicators which indicate a strong demand for the unit in the months ahead.

### Electronic Components Conference

The 10th annual Electronic Components Conference will be held in Washington, D.C. on May 10-12. The conference will have as its theme, "Electronic Components: Art & Science."

### Galvanized Steel Sheet Shipments Set Record

The Committee on Galvanized Steel Sheet Research has announced that shipments of galvanized steel sheets during the first half of 1959 rose to a record total of 1,876,683 tons, an increase of nearly 50 per cent over the same period of 1958. The report is based on American Iron and Steel Institute figures.

The committee also reported that shipments for use in small appliances continued to show a significant increase, attributing the 61-per cent rise in this market category to the ease of installation and maintenance, and the durability of galvanized steel sheets in such applications as stoves, refrigerators, and washing machines.

### Bellows Acquires Jackson Electronic

The Bellows Co. Div. of The International Basic Economy Corp., manufacturer of pneumatic and hydraulic control systems used in industrial automation, has purchased the Jackson Electronic & Mfg. Co., Akron, Ohio, according to Herbert B. Link, president of Bellows.

Jackson Electronic works in the field of research, development and production of industrial control systems, electronic assemblies, and sub-assemblies for use in manufacturing industrial products, and also makes electronic test equipment for use in the fields of aviation and missiles. The company was formed in 1949 by A. V. Petrarca.


**Facts** you should know about...

Binks Airless spraying outfits are available for pumping paints direct from 55- or 10-gallon shipping containers to spray guns.

## Waste King Declares Dividends

Directors of Waste King declared a two-per cent stock dividend on the common stock and a dividend of 26¼ cents on the series C cumulative, convertible, preferred stock, Bertram F. Given, president, announced on Sept. 18.

## Controls Co. Forms Brazil Subsidiary

Controls Co. of America has formed a joint undertaking with Zapparoli Serena S.A., Sao Paulo, Brazil, to produce controls for the manufacturers of automatic washing machines. The new company, called Controles Automaticos Sermar, Ltda., will manufacture timers, pressure and snap switches, synchronous motors, and wiring harnesses.

## Color Clad Aluminum Offered

Color clad aluminum sheet in a wide variety of baked enamel finishes is being offered to fabricators by Revere Copper & Brass, Inc. The new colored aluminum sheet is available in such finishes as simulated brass and simulated linen, and in multi-colored patterns. The product can be used in aluminum awnings, curtain walls, and interior panels, as well as exterior panels for industrial buildings.

## Mercoid Branch Moves

The Philadelphia branch of the Mercoid Corp. has moved to 628 Davisville Rd., Willow Grove, Pa. A complete line of controls, relays, and mercury switches will be carried in stock.

Walter F. Munford, president of United States Steel Corp., died at Cape Cod hospital Sept. 28 at the age of 59. Munford had been president and chief administrative officer of U.S. Steel, a member of its board of directors, and chairman of its executive committee since May 5 of this year.

Until his election as president, he had been executive vice president-engineering and research. For two years prior to that, he was assistant executive vice president of the corporation and, from 1953 to 1956, was president of U.S. Steel's American Steel & Wire Div.

## Eagle Appointed Representative By Northwest Chemical

Northwest Chemical Co. announces the appointment of Eugene O. Eagle of Greensboro, N. C., as their representative for the States of Virginia, North Carolina, and South Carolina.

Eagle is a native of North Carolina, whose formal education and practical experience, augmented by special training given by Northwest Chemical Company, equips him to render service to the metal finishing industry. He will operate from his home office at 302 S. Tremont Drive, Greensboro, N. C.

## NEMA Organizes New Section

Manufacturers of steel underfloor raceway systems, used to provide flexible electrical distribution facilities in commercial buildings, have joined the National Electrical Manufacturers Assn. through affiliation with NEMA's newly-organized Steel Underfloor Raceway Section, it was announced by Joseph F. Miller, NEMA managing director.

## G.E. Names Five Executives

General Electric has announced five major executive appointments, two of which involve organization realignments. The company has established a new International Group to which its International General Electric Co. has been assigned, and a combined radio and television division.

*James H. Goss* has been appointed vice president and group executive for the International Group, reporting directly to Company President Robert Paxton. In his new capacity, Goss will also act on behalf of G.E. with respect to its interest in and relations with the Canadian General Electric Co., Ltd.

*to Page 96* →


# Airless spraying

**Q:** *Is airless atomization spraying the answer to all spray painting and coating problems?*

**A:** No! Not by a long shot.

**Q:** *Where, then, is airless spraying best used?*

**A:** It is excellent for indoor painting maintenance or production work because there is virtually no overspray. Similar benefits apply to outdoor painting maintenance where excessive drift can be both a public nuisance and a property hazard.

**Q:** *Does Binks manufacture airless spraying equipment?*

**A:** Yes. These rugged, dependable and mobile outfits incorporate the latest developments.

**Q:** *Why see Binks first when thinking of airless equipment?*

**A:** Binks offers you a complete, comprehensive line of spraying equipment. Only Binks offers you the opportunity to objectively compare airless spraying with other techniques to select the equipment best suited to *your* requirements. Binks engineering assistance on finishing problems is likewise completely objective.

**Q:** *How can more information be obtained on Binks airless equipment?*

**A:** Ask your Binks industrial distributor for Binks Bulletin A98-7. Or, if you prefer, call your nearest Binks Branch Office or write direct.

*Ask about our spray painting school. Open to all...NO TUITION...covers all phases.*

**Binks**
*EVERYTHING FOR SPRAY PAINTING*

SPRAY GUNS

AUTOMATIC EQUIPMENT

ELECTROSTATIC EQUIPMENT

**Binks Manufacturing Company**
3122-40 Carroll Ave., Chicago 12, Ill.

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

# THE MPM spotlight

**Wallchef by Preway features a "split-level" or double electric oven. The unit is entirely automatic, has two ovens and clock controls, and has a rotisserie unit which can be operated in conjunction with the automatic temperature control if desired. Both ovens have porcelain interiors, dawn gray in color, and slide-out spatter shields. Exterior finishes are handcrafted provincial copper, stainless steel, and four porcelain colors — pink, yellow, turquoise, and white.**

# Do YOU have a SPECIAL Frit Problem

Our ceramic engineers working day in and day out with the practical technicians in our large job enameling plant have produced a wide range of "plant tested" FRITS—many of which resulted from "special" problems.

## YOURS COULD BE DIFFERENT

Ing-Rich ceramic engineers, without obligation, will honestly advise you if any of our Frits will *do your job*—OR—if they find you do have a special Frit problem, will work with you to develop the correct Frit.

## WE BRING YOU VALUABLE KNOW HOW

We believe most ceramic engineers will agree that after exhaustive test in the "Lab" there comes another test of equal importance—what happens under practical working conditions.

*Pioneer Producer of*
LIFETIME
*Porcelain Enamel Products*

**INGRAM-RICHARDSON, INC.**
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

ING-RICH
FRIT
"The Plant Tested Frit"

## Industry News

→ *from Page 93*

*Fred J. Borch* was named vice president and group executive for the Consumer Products Group, the post formerly held by Goss. Included in this group are all the company's major appliances, housewares, television and radio businesses.

*Charles K. Rieger* succeeds Borch as vice president-marketing services. In his new assignment, Rieger will report directly to the G.E. chairman of the board and chief executive officer, Ralph J. Cordiner.

*William P. Von Behren* has been appointed to succeed Rieger as general manager of the Major Appliance Div., with headquarters in Appliance Park, Louisville, Ky. Von Behren was formerly general manager of the company's Radio Reciver Dept.

*Herschner Cross* will head the newly-established Radio-Television Div. as general manager. Headquarters for the new division, which is assigned to the Consumer Products Group, will be in Utica, N.Y.

### Engineering Center Dedicated

Groundbreaking ceremonies for the United Engineering Center, a multi-million dollar, 18-story structure to be erected in New York City, were held Oct. 1. The center will house the headquarters of 18 major engineering societies with a combined membership of more than 300,000.

### General Controls Steps Up Potentiometer Manufacturing

General Controls Co. will step up manufacturing and sales of its precision potentiometer line through duplicate production in both the U.S. and England, William A. Ray, the firm's president, has announced.

Potentiometers will continue to be produced in the company's Electronic Controls Div. plant in Burbank, Calif. They will also be manufactured in the new company subsidiary, General Controls Ltd., Essex, England.

### First Electric House Heating Show Set For Chicago

The first National Electric House Heating Exposition will be held at the Sherman Hotel, Chicago, March 21-23, according to its sponsor, National Electrical Manufacturers Assn.'s Electric House Heating Equipment Section.

The exposition will present the latest in electric direct resistance heating equipment, zone-type heat pumps, insulation, and electric controls for heating equipment. A three-day symposium will be held in conjunction with the exposition.

*(More news on Page 99)*

AS SOCRATES SAID TO XANTIPPE

*"Now porcelain enamel users can enjoy substantial savings in enameling costs with* **APEC** *Reduced Temperature Frits. White or colors, ground or cover coat.* **APEC** *frits are specially compounded to be fired at lower than conventional temperatures while meeting accepted industry standards. Add these fuel savings to* **APEC'S** *lower cost per pound and you'll see why so many dollar-wise porcelain enamelers specify only* **APEC** *Quality Frits."*

APEC

**american porcelain enamel company**

PHONE 2-8808 • 1285 KEATING AVE. • MUSKEGON, MICHIGAN


★★★★★★

## COMING FEATURES

### FABRICATION

**HIGH FREQUENCY RESISTANCE WELDING**

**A DISCUSSION OF THE COATED STEELS**

### FINISHING

**MORE ABOUT DIRECT-ON PORCELAIN ENAMELING**

**IMPROVE FINISH ON STEELCASE DESKS**

### GENERAL

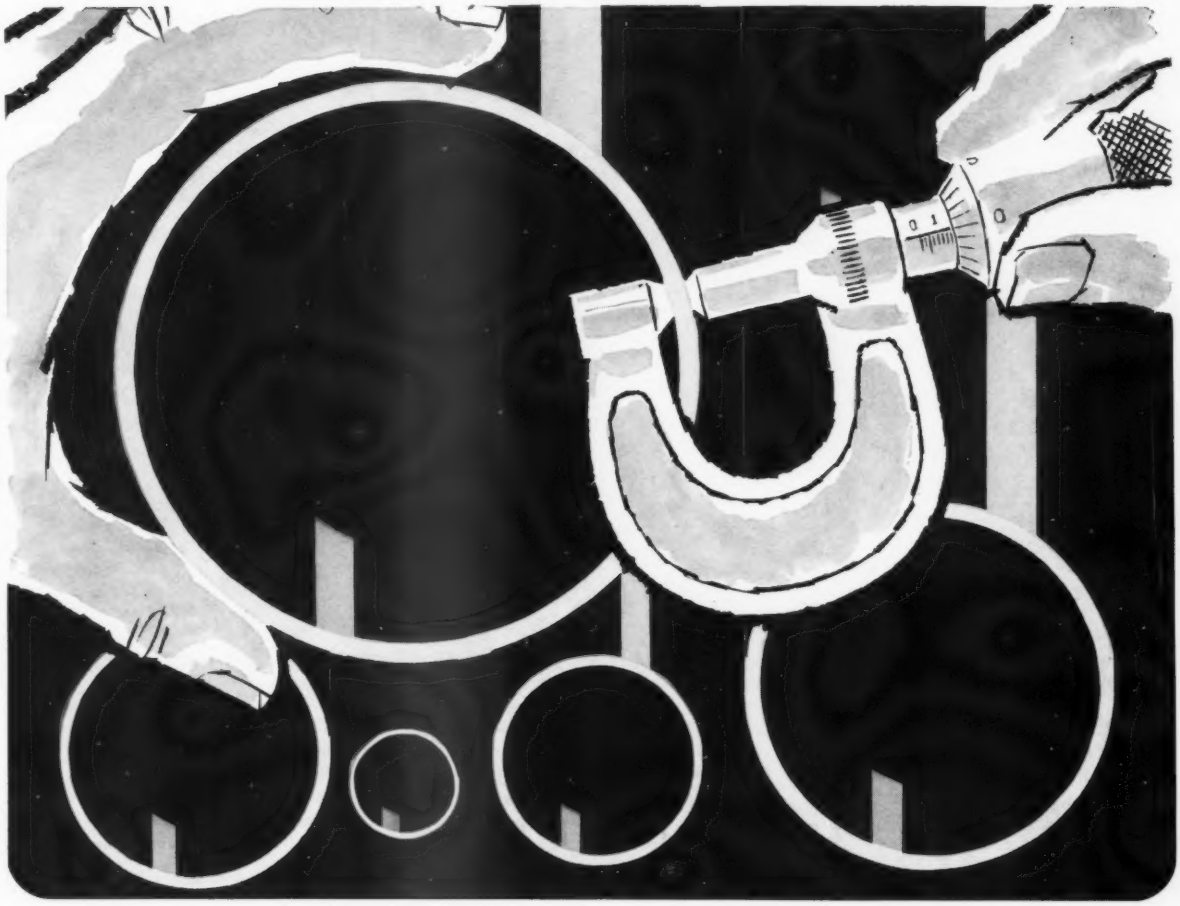
**ULTRASONICS IN APPLIANCE MANUFACTURING**

**PACKAGING AND SHIPPING WATER HEATERS FOR EXPORT**

### DESIGN

**THE NEW LOOK IN BARBER CHAIR DESIGN**

***Experience*** *— the added alloy in* ***Allegheny Stainless***



# looking for thin walls in big diameters?

## A-L now offers a wide range of stainless seamless tubing with walls as thin as .013".

From what other source would you expect to get stainless seamless tubing of 3½" OD with walls as thin as .058" and in the widest range of materials anywhere to fit a broad range of requirements in new products and processes?

Allegheny Stainless Tubing ranges from 3/16" OD to 3½" OD with wall thickness from .013" to .375". Typical of the specials A-L can make are 2½" OD—.032" wall thickness, 3" OD—.042" wall thickness and 3½" OD—.058" wall thickness. All sizes with true circularity, no dents or handling marks.

Stainless seamless tubing is made in all stainless grades including 309, 317, 318, 310, 416 and 446—normally difficult to obtain. For special high-temperature applications, A-L produces tubing in high-strength alloys such as A-286, and in vacuum melted steels and alloys. Also in custom analyses such as low cobalt (.01-.05) grades and with boron additions to standard grades.

A-L also makes composite tubes with bonded combinations of carbon and stainless steels and other metals for unusual corrosion applications in process equipment.

Allegheny Ludlum Tubing is available in small orders in random or cut lengths. Standard grades in stock throughout the country.

Write for your copy of Allegheny Ludlum Stainless Tubing, or call your A-L representative for all the help you need. ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa. Address Dept. MG-23.***

*NEW!*
*FREE—A-L's new book on stainless tubing 32-pages of technical data, sizes, grades and suggested applications.*

7820

AL

**ALLEGHENY LUDLUM**

Export distribution: AIRCO INTERNATIONAL

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

**Lustrous appeal in lamp components.** A New Jersey job plating shop uses BURNEK 22 for bright burnishing lamp parts after brass plating. Parts are ball and self burnished for 30 minutes, rinsed, dried, and lacquered.

**Bright, stain-free handbag parts.** A company making handbags and pocketbooks uses BURNEK 22 for burnishing small steel frames, corners, and ornaments before bright nickel and gold plating. After burnishing, parts are rinsed, dipped in dilute sulfuric acid, and plated.

**Clean, scratch-free zipper pulls.** A large Eastern zipper manufacturer uses BURNEK 22 in open-end oblique barrels to remove stamping oil and bright burnish brass and steel parts. Parts are ball burnished 45 minutes.

# Burnish parts mirror-bright at low cost with BURNEK 22!

Brass, copper, nickel, silver, gold — you name it, Wyandotte BURNEK® 22 can burnish it to a bright luster with exceptional savings! Even handles short runs on aluminum, zinc, steel, and stainless-steel parts.

Most important, BURNEK 22's low cost and short running time help you slash burnishing costs to the bone. So why wait? Call your Wyandotte representative for a revealing demonstration in your own plant. Do it today!

*Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California, and Atlanta, Georgia. Offices in principal cities.*

*The Best in Chemical Products for Metal Finishing*

**Wyandotte CHEMICALS** J. B. FORD DIVISION

## Parker Rust Proof Executives Huddle On The Company's 45th Anniversary

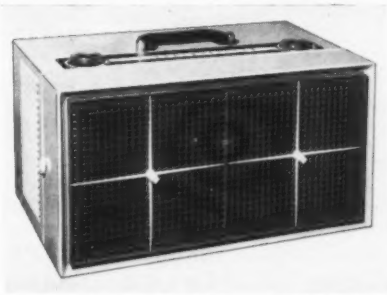
Members of Parker Rust Proof Co.'s sales team huddled for this picture during their recent annual meeting and 45th anniversary celebration in Detroit. The company is a leading manufacturer of surface treatments for metals.

Members of the team are: (back row, left to right) Ross Perry, mgr. Cold Forming Div.; Earl Stone, mgr. Eastern Regional Office; Clint Rasmussen, asst. service mgr.; Leo Bales, mgr. Midwest Regional Office; Ed Thompson, general sales mgr.; Frank Hendricks, sales promotion mgr.; Max Roosa, executive vice president; Carl Moore, mgr., South Western Regional Office; Bob Greene, asst. sales mgr. (Front row, left to right): Barry Dittmore, mgr., South Central Regional Office; Van Darsey, vice president; Mel Crandell, asst. mgr., Eastern Regional Office; Russ Peterson, service mgr.; Sam Headlee, mgr., Pacific Coast Regional Office; Harold McVey, mgr., New Products, Division.

## Coolerator Announces Expanded Air Purifier Line

An expanded line of air purifiers, bearing the name "Lectrofilter," has been announced by W. G. Kronauge, vice president in charge of sales, Coolerator Div., McGraw-Edison Co.

The units build up an electrostatic

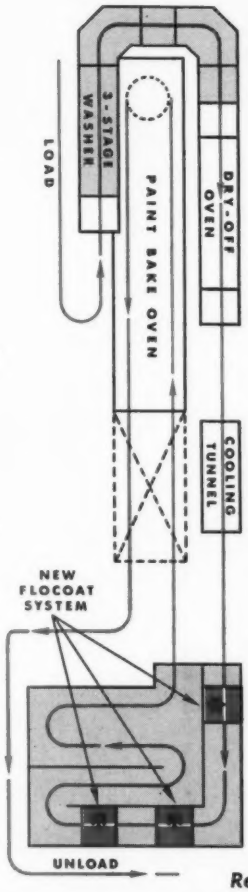


charge of about 15,000 to 18,000 volts, which is transmitted to the filter. Both units feature an ultraviolet lamp for air purification and odor control, plus easy accessibility to the filter, which can be vacuum cleaned and reused.

Said Kronauge, "The unit is not only valuable to those suffering from hay fever and asthma, but also has its year-round application for room smoke removal from the air."

## Silvercraft, Inc. Dissolves

It is reported that Silvercraft, Inc., Louisville, Ky., manufacturers of cooling towers and phone booths, has dissolved. In the future, Metals Service Corp., 627 Bergman, Louisville, Ky., will turn out a cooling tower under Silvercraft license. *(More news on Page 100)*


**NEW**

**3 Color Flocoat System with 5 Minute Color Change**

This system was specially engineered by Burdett Engineers to provide automation in multi-color paint applications in the plant of the Douglas-Fisher Corporation in Bellwood, Illinois, manufacturers of tubular metal furniture.

This complete finishing system by Burdett features a new concept in Flocoating with a 3-color system that provides color change in approximately five minutes.

This system consists of 750 feet of No. 348 conveyor, variable from 4 to 12 FPM; a 3-stage washer; a 25' dry-off oven heated by Burdett No. 10-L Burners, providing a heat range from 200° to 450° F.; a 15' cooling tunnel; a Burdett 3-color Flocoating System; and a Burdett 2-Pass "A" Type "Radiant Heat" Paint Baking Oven with a range from 200° to 425° F. Operating at 325° F. on current production, the total baking cycle is approximately 8 minutes.

Here is a perfect example of the engineering skill and production "know-how" that Burdett offers you to open the door to improved quality of production — increased output — and lower cost of operating.

Whether you are considering a completely new finishing system—an addition to your present layout—or, the renovating of your old system—consult Burdett for the engineering answer with the bonus values—either "Radiant" or "Convection"

SEE OUR CATALOG IN SWEET'S PLANT ENGINEERING FILE OR WRITE FOR COPY

***Request complete information without delay!***

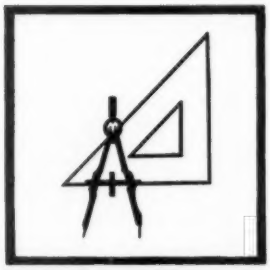
***Write for the Burdett story!***

**BURDETT**
MANUFACTURING COMPANY

4918 South Monitor Avenue, Chicago 38, Illinois

DETROIT PHILADELPHIA NEW YORK CLEVELAND DALLAS

*Manufacturers of*
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT" SYSTEMS, OVENS, HEATERS
AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS



FROM DRAWING BOARD

TO FINISHED PRODUCT...

FASTER WITH NICKELOID

**Finished Raw Material Fabricated with Standard Production Methods**

In tune with the times, are Nickeloid Metals. They provide design freedom and manufacturing simplicity with three of five production steps eliminated. The Nickeloid Method gets a new model or product rolling in production, fast! Quicker to shipping dock . . . saves on tooling and equipment outlay . . . lower inventory of parts in process. They simplify, simplify, simplify: in design, in purchasing, in production. Made as only 61 years of special know-how can refine a product with deep-down durability and quality. Practical: can be formed, stamped, bent, crimped, seamed, blanked, soldered, etched, spot-welded. Gleaming finishes of chromium, nickel, copper, or brass electroplated steel and other base metals. Sheets, strips, coils — polished or satin. A galaxy of breath-taking stripes, patterns, crimps and textures. Protective Mar-Not coatings. See Sweet's Catalog for additional information, or write us for Introductory Kit, which includes metal samples.

NICKELOID METALS SINCE 1898 NM

**American Nickeloid Company**
**Peru 11, Illinois**
Plants: Peru, Ill., and Walnutport, Pa.


## Ground Broken For Research House

Ground was broken on Sept. 30 for a porcelain enamel research house in Northfield Center, 20 miles south of Cleveland, Ohio. The house is being built by Ferro Corp., Cleveland, in cooperation with such firms as U.S. Steel, General Electric, American Standard, and RCA Whirlpool. The one and one-half story structure will be a test vehicle for a number of novel ideas in residential construction. Carl Koch & Assoc., Cambridge, Mass., is the designer.

*Robert A. Weaver (center), chairman of Ferro Corp., takes the first shovelful of earth to break ground for the porcelain enamel research house. Flanking him are architect Carl Koch (left), and Robert J. Ritchey, manager-advertising and sales promotion, U.S. Steel Corp.*

## Resistance Welding Orders Up

Resistance welding business for the first seven months of 59 is 40 per cent ahead of orders for the same period last year, according to statistics compiled by the Resistance Welder Manufacturers Assn. New orders during August amounted to more than 2¼ million dollars, an increase of 17 per cent over July

## PMI Elects New Officers

The annual meeting of the Pressed Metal Institute was held Sept. 13-18 at the Stanley Hotel, Estes Park, Colo., and the following officers were elected for the coming year.

President — F. F. Rimmler, Volkert Stampings, Inc., Queens Village, New York, N.Y.; vice president — M. A. Sherwood, Grand Haven Stamped Products Co., Grand Haven, Mich.; vice president — W. J. Primrose, Jr., The Dickey-Grabler Co., Cleveland, Ohio; secretary-treasurer — Melvin Lorentz, HPL Mfg. Co., Cleveland, Ohio; honorary secretary-treasurer — W. Bryant Gemmill, American Stamping Co., Cleveland, Ohio.

## Pressure Blast Mfg. Buys Sand Blast Equip. Div.

The Sand Blast Equipment Div. of Leiman Bros. Co., Inc., Newark, N.J., has been purchased by the Pressure Blast Mfg. Co., Inc., Manchester, Conn. The Newark firm had manufactured sand blasting equipment as an adjunct to its line of vacuum air pumps. The sale includes all rights, patents, tooling, and inventory.

## Electronics, Automation Featured At ISA Show

Animated and static displays of a myriad of industrial controls, electronics, and automation equipment were displayed at the 14th annual Instrument—Automation Conference & Exhibit held Sept. 21-25 at Chicago's International Amphitheatre. Keeping step with the ever-mushrooming space era, a wide range of electronics equipment was presented.

## Sellout Predicted For NHMA Show

A sold-out January housewares show in Chicago has been predicted by Dolph Zapfel, secretary of the National Housewares Manufacturers Assn. Zapfel reported that manufacturers' applications for the 32nd National Housewares Exhibit to be held Jan. 11-15 at Navy Pier and adjacent Drill Hall have exceeded all previous requests for display space.

According to Zapfel, increased buyer attendance at each show and the additional exhibitor personnel required by the increased booth traffic and larger number of lines have added to the space problem.

## Heat Pump Certification Planned By ARI

A certification program for unitary heat pumps will be inaugurated by the Air-Conditioning and Refrigeration Institute to parallel the already operative certification program for unitary air-conditioners. The program is expected to be underway sometime in 1960.

The program will be based on testing and rating in accordance with ARI standards 240, 210, and 250, which will be revised to provide for the heat pump certification and testing. When inaugurated, the program will provide for testing and rating by manufacturers and reporting ratings to ARI, for publication of ratings in an official ARI Directory, for random testing of units on the market by an independent testing laboratory, and for special tests on units on which complaints have been lodged.

## METAL PRODUCTS STATISTICS

| | | 1959 (Units) | 1958 (Units) | % Change |
|---|---|---|---|---|
| Gas Furnaces-Warm Air | August | 114,800 | 90,200 | +27.3 |
| | Jan.-Aug. | 647,500 | 479,600 | +35.0 |
| Gas Boilers | August | 16,600 | 14,700 | +12.9 |
| | Jan.-Aug. | 81,600 | 67,300 | +21.2 |
| Gas Conversion Burners | August | 22,900 | 19,400 | +18.0 |
| | Jan.-Aug. | 87,900 | 80,200 | + 9.6 |
| Oil Fired Central Heating Equipment | August | * | 65,016 | * |
| | Jan.-Aug. | * | 325,135 | * |
| Gas Ranges, Free Standing | August | 140,200 | 137,100 | + 2.3 |
| | Jan.-Aug. | 1,071,500 | 1,016,700 | + 5.4 |
| Gas Ranges, Built-In | August | 32,200 | 20,500 | +57.1 |
| | Jan.-Aug. | 219,200 | 133,000 | +64.8 |
| Gas Water Heaters | August | 251,200 | 215,500 | +16.6 |
| | Jan.-Aug. | 2,040,600 | 1,773,100 | +15.1 |
| Gas Vented Recessed Wall Heaters | August | 40,800 | 33,800 | +20.7 |
| | Jan.-Aug. | 273,300 | 217,300 | +25.8 |
| Gas Floor Furnaces | August | 9,900 | 10,500 | - 5.7 |
| | Jan.-Aug. | 54,500 | 49,800 | + 9.4 |
| Gas Direct Heating Equip | August | 185,100 | 175,400 | + 5.5 |
| | Jan.-Aug. | 771,900 | 703,000 | + 9.8 |
| Gas Unit Heaters & Duct Furnaces | August | 14,800 | 10,000 | +48.0 |
| | Jan.-Aug. | 90,600 | 75,100 | +20.6 |
| Gas Incinerators | August | 4,600 | 4,400 | + 4.5 |
| | Jan.-Aug. | 28,800 | 30,700 | - 6.2 |
| Electric Household Refrigerators | August | 314,100 | 246,900 | +27.0 |
| | Jan.-Aug. | 2,551,200 | 2,011,600 | +27.0 |
| Electric Farm & Home Freezers | August | 108,400 | 101,400 | + 7.0 |
| | Jan.-Aug. | 886,000 | 714,700 | +24.0 |
| Electric Ranges, Free-Standing | August | 61,300 | 48,200 | +28.0 |
| | Jan.-Aug. | 624,000 | 505,700 | +23.0 |
| Electric Ranges, Built-In | August | 55,300 | 33,200 | +66.0 |
| | Jan.-Aug. | 470,700 | 318,200 | +48.0 |
| Electric Storage Water Heaters | August | 56,400 | 61,000 | - 7.0 |
| | Jan.-Aug. | 555,000 | 537,500 | + 3.0 |
| Electric Dishwashers | August | 46,500 | 28,400 | +63.0 |
| | Jan.-Aug. | 337,700 | 245,600 | +37.0 |
| Electric Food Waste Disposers | August | 60,500 | 47,500 | +27.0 |
| | Jan.-Aug. | 472,300 | 379,300 | +24.0 |
| Combination Washer-Dryers | August | 18,179 | 13,659 | +33.0 |
| | Jan.-Aug. | 115,093 | 86,339 | +33.0 |
| Washers, Automatic & Semi | August | 270,332 | 246,479 | +10.0 |
| | Jan.-Aug. | 1,891,871 | 1,638,704 | +15.0 |
| Washers, Wringer & All Other | August | 89,517 | 80,306 | +12.0 |
| | Jan.-Aug. | 596,226 | 542,961 | +10.0 |
| Electric Dryers | August | 87,291 | 72,350 | +21.0 |
| | Jan.-Aug. | 493,892 | 398,683 | +24.0 |
| Gas Dryers | August | 45,906 | 37,483 | +22.0 |
| | Jan.-Aug. | 241,974 | 173,208 | +40.0 |
| Vacuum Cleaners | August | 268,465 | 280,226 | - 4.4 |
| | Jan.-Aug. | 2,200,887 | 2,045,728 | + 7.6 |
| Metal Furniture | August | * | * | + 3.0 |
| | Jan.-Aug. | * | * | + 7.0 |
| Television | August | 547,445 | 507,526 | + 7.9 |
| | Jan.-Aug. | 3,680,520 | 2,950,455 | +24.7 |
| Radio (1) | August | 1,009,423 | 981,394 | + 2.9 |
| | Jan.-Aug. | 8,946,044 | 6,193,529 | +44.4 |
| Typewriters | August | 114,052 | * | * |
| | Jan.-Aug. | 793,687 | * | * |

(1) Including auto receivers
* Not reported
Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

*Prize winner! This clock container won a Gold Award at the Fifth Annual Fibre Box Competition.*

# Big glass clock "floats" safely home in this new container by International Paper

It's quite a trick to deliver this clock in one piece. The mechanism is delicate. The glass face is 12 inches across!

But the packaging experts of International Paper's Container Division did the trick. So well, in fact, that the container they designed won a Gold Award (one of ten different awards won by International Paper) at this year's Fifth Annual Fibre Box Competition.

The same design and manufacturing experts are constantly busy creating new and ingenious corrugated shipping containers for our customers—and every container gives you these 7 *extra values:*

1. **First-class engineering.** Truly creative packaging by the same team that originated the tube-and-cap design, now standard in the industry, and many others.

2. **Time-proved boxmaking skill:** several hundred million containers annually.

3. **Built-in savings.** Maximum strength, least weight, best cost-saving design.

4. **Convenient delivery:** from 19 box plants. (2 others are now under construction.)

5. **Virgin fibre** for greatest strength, smooth surface, uniform color.

6. **Fair prices** in line with top quality.

7. **A dependable source of supply.** The *only* containers backed by the full resources of International Paper.

See your Container Division packaging expert. He's a good man to know.

**Container Division INTERNATIONAL PAPER New York 17, N. Y.**

# safe transit

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DANA CHASE PUBLICATIONS, INC.
York Street at Park Avenue
Elmhurst, Illinois

**editorial voice of the national safe transit program**

**devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.**

## Canadian Packaging Exposition Slated For Toronto, Nov. 3-5

The eighth Canadian National Packaging Exposition will hold its three-day show at the Automotive Bldg., Exhibition Grounds, Toronto, Nov. 3-5. One hundred and seventy-six exhibitors will occupy 67,000 square feet of space at the show. As an added attraction, entries in the annual packaging and display competitions will again be on display.

## Pamphlet On "Bin Boxes"

The National Wooden Box Assn. has made available a pamphlet entitled "Bin Boxes," which covers wooden unit load containers. This 12-page, illustrated booklet contains information gathered by the NWBA staff in contacting box manufacturers and users. The pamphlet discusses the economics of unit handling, its origin, and importance. For a complimentary copy, contact Dept. MPM, National Wooden Box Assn., 402 Barr Bldg., Washington 6, D.C.

## McKnight Named Product Mgr. at Baker Industrial Trucks

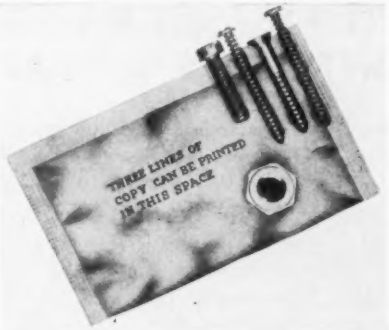
Thomas C. McKnight has been appointed product manager-electric trucks at Baker Industrial Trucks, a division of Otis Elevator Co., it has been announced by J. Thomas Swift, general sales manager. McKnight replaces Edward P. Patrick, who has been appointed sales application specialist at the Cleveland firm.

## Parker-Kalon Offers Package With 1,000 Fasteners

Parker-Kalon has announced a larger-quantity fastener package for the convenience of air conditioning contractors, heating contractors, and other sheet metal fabricators. The package contains 1,000 pieces of Parker's pan head type "A" tapping screw. The company is located in Clifton, N.J., though warehouses are maintained in Chicago and Los Angeles.

## New Packaging Process Shown In Free Brochure

An illustrated brochure that describes an electronic packaging process is offered by this manufacturer. Said to save time and money, the process is applicable to any type of manufactured metal product requiring fasteners in




packaging, including appliances, business machines, vending machines, and metal furniture.

The process will sort assembly materials in different sizes and assortments and package items in either translucent or kraft opaque bags up to 4½" by 4½" in size. It will also print up to three lines of copy on the side of the package. To obtain a free copy of the brochure, write to Dept. MPM, Mid-Continent Screw Products Co., 5844 N. Broadway, Chicago 40, Ill.

## Shock Detection Device

A shock detection device for shipments of delicate instruments and precision equipment in transit is described in an illustrated bulletin available for designers and manufacturers. The bulletin describes the principle, operation, and applications of the indicator, which is pre-set and sealed to trigger at a specific shock level. Copies of the bulletin may be obtained by writing to Dept. MPM, Inertia Switch, Inc., 311 W. 43rd St., New York, N.Y.

## Carton Becomes Display Unit For Built-In Ranges

A corrugated shipping carton that can be converted into a display unit for built-in ranges has been introduced by Cribbean & Sexton, manufacturer of Universal gas and electric ranges. This sturdy container makes it possible for builders to display all colors of ranges in model homes and showrooms without expensive cabinetry. The carton was designed by Rex Rogers, packaging engineer at Cribben & Sexton.

# CHICAGO MILL — Largest Manufacturers Of EXPORT SHIPPING CONTAINERS for the APPLIANCE INDUSTRY

**FREE:** Illustrated catalog describing Chicago Mill Containers and Services.

America's leading appliance manufacturers rely on Chicago Mill for export shipping containers to assure safe arrival of their products. These manufacturers know, from long experience, that Chicago Mill containers protect the finishes and mechanisms, withstand the handling and shocks encountered during overseas shipment, discourage pilferage and practically eliminate loss and damage claims.
Whether you do your own packaging for overseas shipment — or have it done for you by export packaging firms — your appliances will reach their destinations safely in Chicago Mill Export Containers!

**FOR SAFER TRANSIT BY • BOAT • TRUCK • TRAIN • PLANE**
***Always Use Chicago Mill Shipping Containers.***

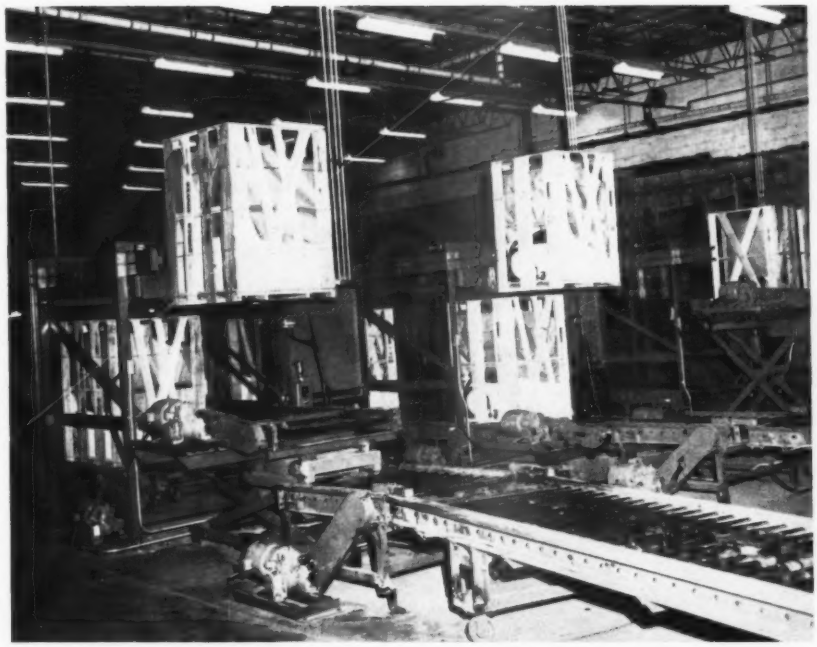
SINCE 1881
PROUD OF THE PAST • CONFIDENT OF THE FUTURE

## CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — Chicago 3, Illinois

*Plants at:*

Helena, Arkansas • Rockmart, Georgia • Tallulah, Louisiana • Greenville, Mississippi • Chicago, Illinois



*In the air, the top machine is suspended by a fork-like retractable device which takes over from elevator section of conveyor at top point of its "up" cycle.*

# Double-stacking system facilitates product handling

THINGS ARE REALLY "UP IN THE AIR" at Speed Queen due to the installation of a new double-stacking system recently put into operation at the McGraw-Edison Co. division in Ripon, Wis.

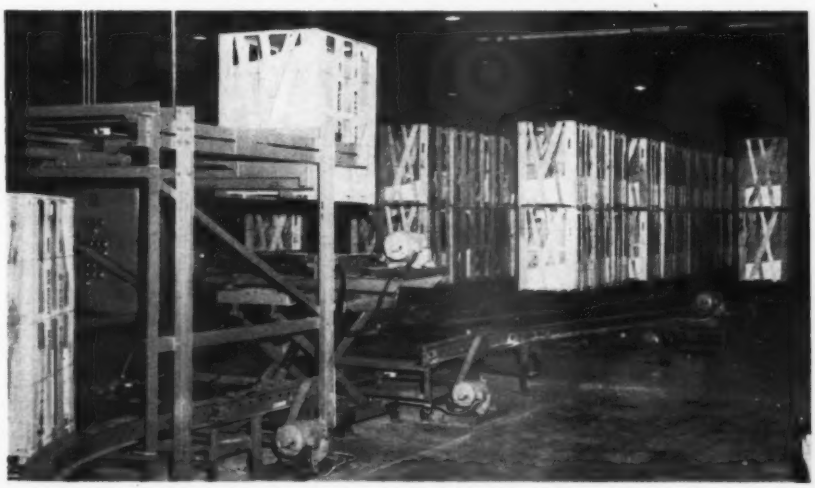
Facilitating shipping and product handling as well as allowing for a substantial increase in volume, the new system consists of three completely-automatic units installed at the end of the automatic washing machine, automatic dryer, and conventional washer assembly lines. By lifting one machine up into the air, a second unit is allowed to pass under.

When the second unit is directly beneath, the top machine is lowered and the double stack moves out and down the conveyor system. In the air, the top machine is suspended by a fork-like retractable device which takes over from the elevator section of the conveyor at the top point in its "up" cycle.

Next stop for the crated products is on one of the nine conveyor lines which lead from the stacking units. Here machines are pre-selected, through a railroad switch-type device, for loading in semi-trailers or railroad cars. By switching from one line to another, an operator is able to send the proper number of each machine in the correct shipping order.

At the end of the line, a lift truck operator picks up the two double-stacked crates and loads them into the outgoing carrier. Before installation of the new product handling and shipping system, the crated products were loaded individually by men using hand trucks.

*Next stop for the crated products is on one of the nine conveyor lines which lead from the stacking units. Machines are preselected, through a railroad switch-type device, for loading in semi-trailers or railroad cars.*



*At the end of the line, a lift truck operator picks up the two double-stacked crates, loading them on outgoing carrier.*

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## AHLMA conference

→ *from Page 64*

three-model line. The low end model would be a leader item, the middle of the line model would be a step up in convenience and operation, and the top of the line model would be for the "Cadillac" trade.

Advantages of this standardization would be a reduction in capital investment for equipment and dies; savings in warehouse and inventory expenses due to fewer styles carried; lower costs for service, since as time went on, all of the "bugs" would be worked out of the appliance; and savings in labor costs.

### Promote pride of accomplishment

Mrs. Livingston urged the home laundry manufacturers to promote pride of accomplishment in laundering as well as ease and convenience. Her criticism centered on the instruction booklets which come with the washer, dryer, or combo. She stated that, in most cases, the quantity of water for proper use was not given at all in most booklets and, if it were, fewer service calls would be required.

She also advocated putting the model number and name on the first page of the booklet for service reference and, in line with the service problem, tell the housewife on the first page of the booklet who to call in case service is necessary.

### Only 40 per cent washer saturation

To summarize all these ideas, the topic "If I had to get all these ideas into one appliance. . ." was assigned to Whirlpool's Brooker.

The Whirlpool president remarked that "because of our highly-accelerated rate of development, and because of our technological advancements, we should have automatic washers and dryers in every home in America." He stated that the saturation of washers in American homes was now 40.8 per cent; dryers, 15.8 per cent; and combinations, 1.1 per cent. "The industry should have as its immediate goal an automatic washer saturation of 60 per cent."

Specifically, his requests to the industry as a whole were to gear a system of advertising together, to recognize that the consumer, in wanting good service, does not realize the complexity of parts, and to tighten quality specifications. He also asked the industry to design resemblance in washers, dryers, combos, and ironers "so that you would not have to retool a whole line every year and there would be interchangeability of parts," and to have an industry-wide warranty program.

# keep this man in mind

## .....when you design a new appliance

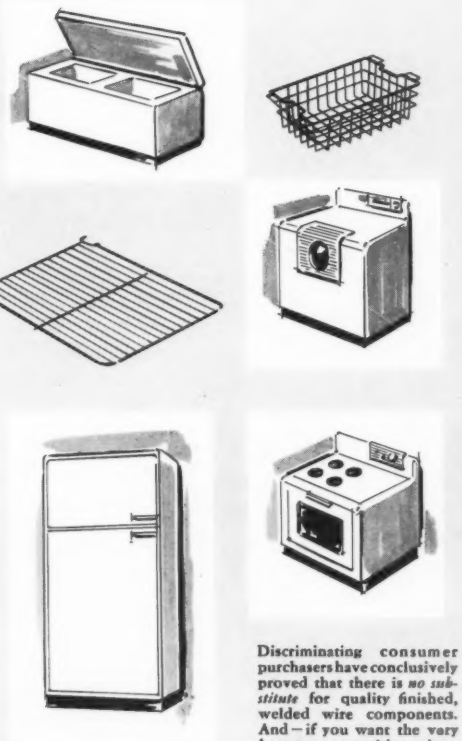
### *or restyle an old one*

Is wire design your problem? If it concerns a product made of welded steel wire, designing-fabricating and finishing it is our business; as it has been for over half a century.

Anything . . . made of wire to your specifications. Any size, shape or quantity, in a wide range of attractive modern finishes.

We handle all details and *all* our facilities are within our own plants: design engineering, tooling, fabricating, finishing, inspecting and guaranteed on-time delivery. We have 385,000 square feet of the most modern wire forming, fabricating and finishing facilities to serve you better—plus hundreds of experienced people who make it their business to improve your business through the use of versatile, modern wire.

Why not make your manufacturing dollar go further? *Keep the USP man in mind.* He will survey your problem and provide a sound, economical solution—without obligation.



Discriminating consumer purchasers have conclusively proved that there is *no substitute* for quality finished, welded wire components. And—if you want the very best at a competitive price—just specify USP.

***You are Cordially Invited** . . . to investigate the advantages of Union Steel's wire product design and development service, without obligation. A phone call to NAtional 9-2181 (Albion) will bring immediate service.*

*First Name in Welded Wire Products—*

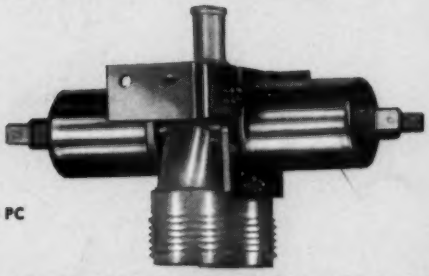
**UNION STEEL PRODUCTS CO.**

**Contract Wire Division ALBION, MICHIGAN**

# Here are FIVE NEW MEMBERS of the DOLE family of precision control valves

N-10

A new double solenoid non-thermostatic valve with molded integral outlet and incorporating the flow control feature in the outlet. Hot, mixed and cold water is provided.

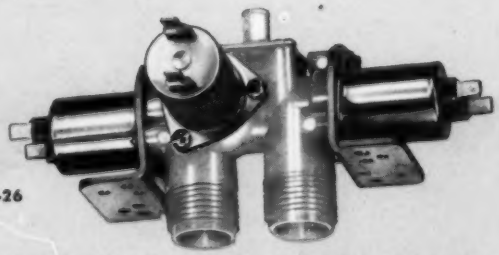


N-10 PC

A two solenoid mixing valve with molded integral outlet and either restrictions or flow controls at each inlet. Provides hot, mixed and cold water. Inlet flow controls give a degree of mixed temperature compensation with varying inlet pressures.

N-32

This non-thermostatic double solenoid mixing valve can be supplied with flow control feature. Provides hot, medium and mixed water.



N-26

A three solenoid non-thermostatic mixing valve, providing control of hot, medium, mixed, cool and cold water. Has flow control feature in outlet and balancing inlet restrictions to compensate for inlet pressure differentials.

N-23

A non-thermostatic mixing valve having a third solenoid for control of cold water to the condenser system of a combination washer-dryer. Condenser water flows from an auxiliary outlet. Water through the main outlet may be hot, mixed or cold. Can also be applied to automatic washers to control water supply and operate a conditioner or detergent dispenser.

## Here are just a few of the many DOLE *firsts*

The first thermostatic mixing valve for automatic clothes washers.

We also produced the first non-thermostatic mixing valve for the same industry.

The first thermostatic valve which also provided cold water for washing or rinsing.

We produced the first valve for condenser clothes dryers.

We were the first to offer the economies resulting from the use of molded nylon valve bodies.

The first valves with integral solenoids were produced by Dole.

Dole designed and sold the first solenoid operated valves for combination washer-dryers including in one package control of wash and rinse water and the water needed for the condenser system.

The first solenoid valves for portable dishwashers were Dole products.

Dole designed the first storage type fabric conditioner dispenser.

The first single solenoid valve for economy model clothes washers was a Dole development.

Back when the first automatic washing machine was still on the drawing board, Dole designed and built the first practical solenoid valve to turn the water on and off . . . to control the rate of flow . . . and to mix the water to the desired temperature.

For more than 50 years the problems of control have been uppermost in the minds of Dole engineers. And year after year they have been first with new improvements . . . new developments . . . new ways of doing the job better.

Today . . . Dole again leads the field with five new solenoid valves. Each one embodies certain basic, proven Dole principles plus important improvements that contribute materially to the smooth, efficient operation of the machine for which they were designed.

This year . . . as every year . . . you can look to Dole for the solution to your control problems . . . and find it. If you want details about any of these new valves, we'll be glad to supply them.

*First with the finest for more than fifty years*

Control with

# DOLE®

THE DOLE VALVE COMPANY
6201 Oakton Street • Morton Grove, Illinois
(Chicago Suburb)